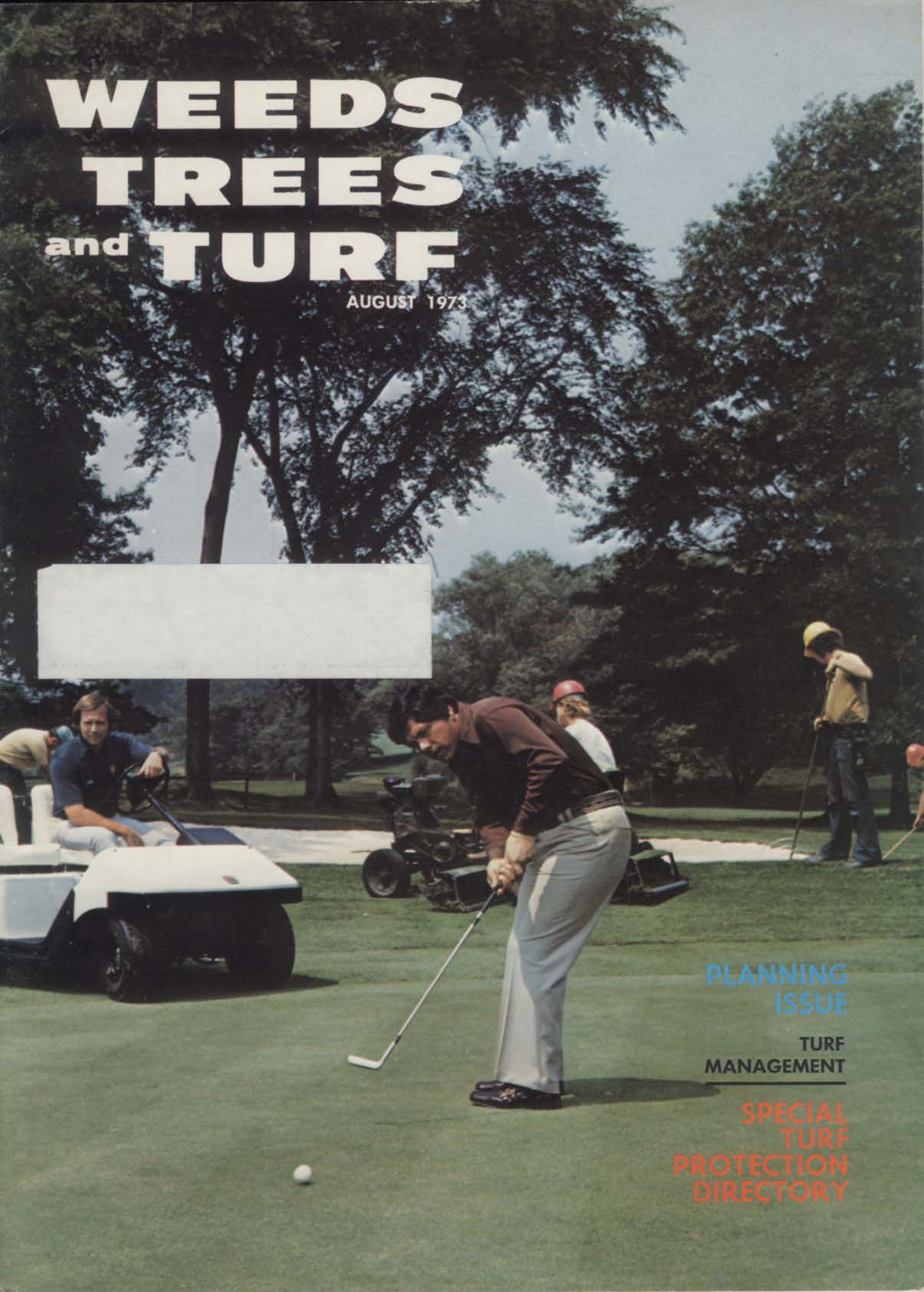
WEEDS TREES and TURF

AUGUST 1973



PLANNING ISSUE

TURF MANAGEMENT

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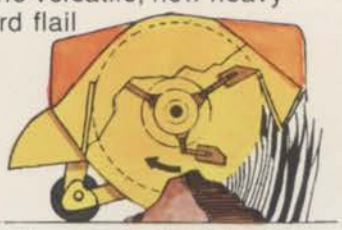

your Ford tractor and equipment dealer. He is listed in the Yellow Pages under "Tractor Dealers" or "Contractors' Equipment & Supplies." See him for information on how to buy, lease, rent, finance.

NUMBER ONE ON WHEELS AND GROWING

FORD TRACTOR

Ford

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WEEDS TREES and TURF®

Volume 12, No. 8 August, 1973

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"Serving The Green Industry"

Turf Management **14**

Denny Dennison is typical of the modern superintendents with creative ideas on turfgrass management. He's implemented new programs in disease control at Pine Country Club that have paid big dividends on the course.

Chemical First Aid For California Community **16**

Aquatic herbicides have made a tremendous difference in the attitude of the residents at Westlake Village. Because much of the community life centered around the 150 acre man-made lake, it was necessary to control unwanted vegetation. Lake manager Bert Dell reports on his experience with Casoron G-10 granules.

One Man, Two Courses, Many Challenges **18**

Superintendent Bob Shields has experienced many events in his 25 years of service as a turfgrass manager. Here are a few of his insights into golf course management.

Crabgrass Protection From The Sky **22**

Getting a course ready for a tournament is no easy task. It takes months of concentrated preparation. Roger Schmitt, superintendent at Crawford Country Club, relates one of his experiences he had earlier this year in getting ready for the PGA Shrine-Robinson Open Golf Classic.

Proven Programs For Quality Turf **24**

Here's a chance to look over the shoulder of several superintendents. Each has different programs which call for different types of management. Compare your situation with these professionals.

The Winning Combination At Preakness Hills **30**

Poor drainage and soil compaction can mean extra work for a superintendent. At the 45 year old Preakness Hills Country Club, Arthur Elmers has been using gypsum with interesting results.

1973 Turf Protection Directory ..... **AA**

Clever New Irritant Aids In Pest Analysis ..... **OO**

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The Cover

Any course hosting the Professional Golf Association (PGA) tournament must start preparations months in advance. Top-notch management and smooth coordination of activities play a big part in a successful tourney. Bill Burdick, superintendent at Canterbury Country Club, knows this well. He's had his crews getting the course in shape since early spring for this year's match. Our cover shows Bill checking on a mowing operation and sandtrap maintenance around a green. That fellow taking a practice putt is Lee Trevino. At presstime he had signed up with Otis Elevator Company to serve as amiable ambassador of all Otis product lines, including the specialty vehicle division which manufactures the golf carts.

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Selective Herbicide

For straight line chipping and putting, your players need greens free of poa annua. Now's the time to start control of poa. Use Betasan herbicide now to start your poa eradication program... or your prevention program if your turf is free of poa.

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Betasan® from Stauffer CHEMICALS

Four Horsemen Of Business

A good friend of ours, who is the regional sales manager for a large manufacturer, once told a group of salesmen that there was no such thing as problem areas in his sales region. "They're opportunities!" he said. And with that, he began one of the greatest turnabouts in marketing known in the industry. A sales climate precipitated by identified problems suddenly caught a new spark and plunged headlong into a whirlwind of successful sales.

How this happened is another topic. Why it happened needs further elucidation.

The key factors in making any business a success are *motivation, management, leadership and opportunity.* Whether this business be turfgrass care, tree pruning, weed control or environmental protection chemical sales, these elements must interrelate in a positive way to guarantee success. Lack of any one will denote deficiencies in other areas.

It is easy to become motivated. A peppy sales talk, a dynamic speaker, a strong sense of responsibility, or a challenge can quickly turn a sluggard into a ball of fire. Yet, motivation is not enough. We can be highly motivated while in neutral.

But add the factor of management and a businessman can start his business machine moving.

A superintendent who makes maximum use of allocated time, who constructively employs workers where the greatest potential can be derived from their efforts, who wisely uses available resources and who judiciously anticipates troubled situations is called a good manager. He may be all these and lack leadership, however.

This essential element can make the difference between running a business in low gear with modest profits and a higher gear with substantial profits. Any successful business must have capable leaders who possess desirable leadership traits and the talents to use them. But every leader is confronted with problem areas. Only when this leader uses the factors of motivation and management to turn problems into opportunities will the business rate in the top echelons of the market.

That's why our friend's positive approach to success turned the tide. An analysis of the situation would show that his salesmen were highly motivated, dedicated managers of their time and

(continued on page 65)

A wager you can't lose

We'll bet you the hat that you like

BONNIEBLUE

KENTUCKY BLUEGRASS

Maybe you saw this hat on the Bonnieblue Technical Bulletin which we issued last year. It's become almost as famous as Bonnieblue, the new disease-resistant Kentucky Bluegrass developed by Rutgers University, the United States Golf Association Green Section, and E. F. Burlingham & Sons. In fact the hat is yours if you order 100 twenty-five pound sacks of Bonnieblue. We know you're going to like Bonnieblue's fine texture; rich dark-green color; excellent turf performance and turf-type growth habit. Send the coupon below for more information. Also ask about Koket Chewings Fescue, Lamora Perennial Ryegrass and Sydsport Kentucky Bluegrass.

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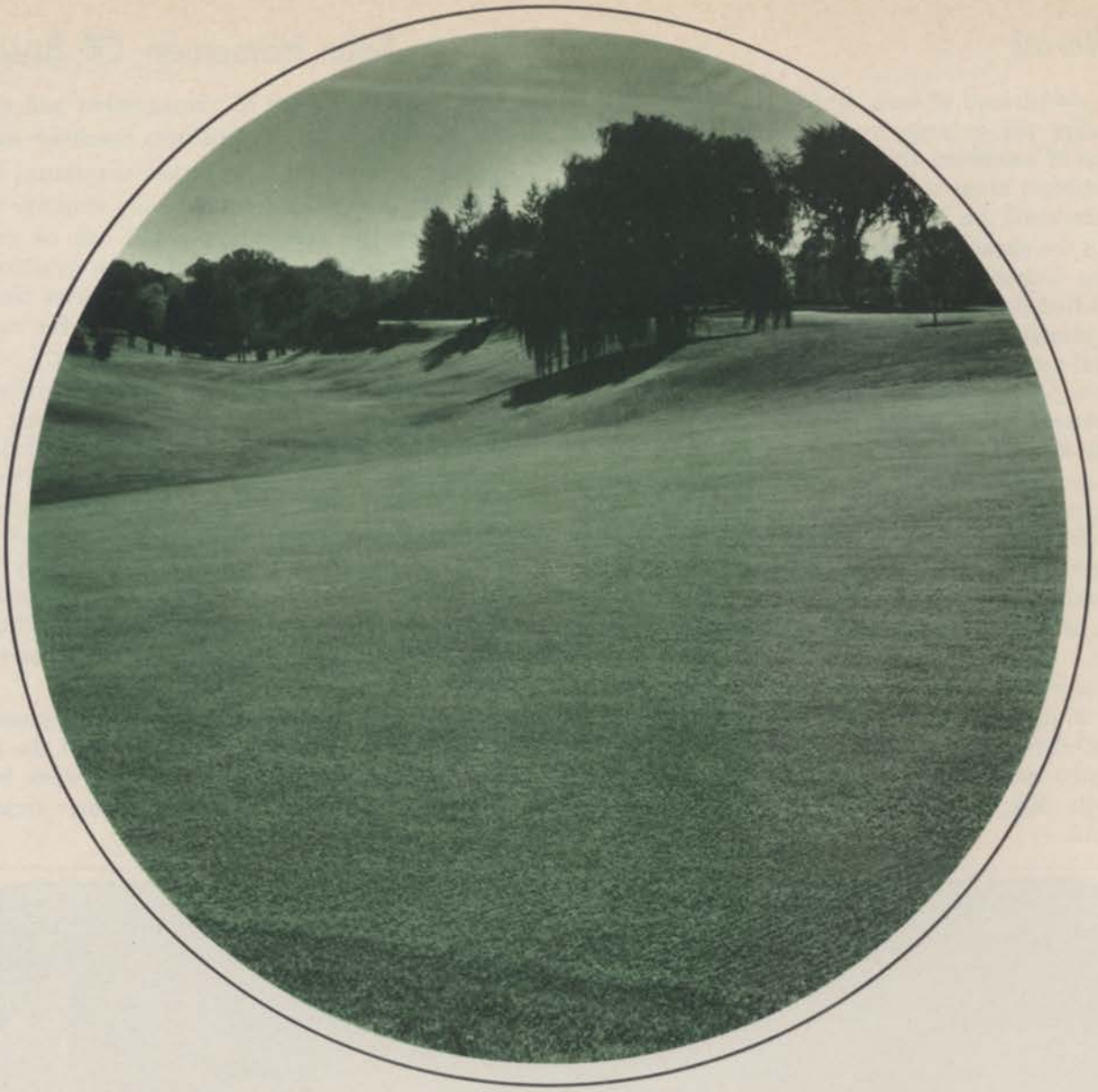

Follow through with Dacamine... and knock out 76 stubborn broadleaf weeds.

Dacamine® turf herbicide kills your toughest broadleaf weeds . . . including perennial undesirables like dandelion, chickweed, poison ivy and knotweed.

Dacamine is powerful. Yet non-volatile. Won't jump up and move across the fairway on a hot day. So there's less danger to your valuable ornamentals.

Dacamine herbicide combines the weed-killing power of an ester with the safety of an amine. A water emulsifiable, postemergence herbicide, it has the unique characteristic to penetrate waxy weed foliage. Then Dacamine moves all the way to the roots. Kills the whole weed, not just the top.

This year, keep broadleaf weeds from blotting your turf. Add Dacamine to your weed control program and you'll kill tough weeds without the danger of volatilization.

Ask your supplier for more information or write: Agricultural Chemicals Division, Diamond Shamrock Chemical Company, 1100 Superior Avenue, Cleveland OH 44114.

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The powdered Nitroform for spray application. Ideal for penetrating dense turf such as golf greens.

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Take a look to see if your supplier's bag is on the next page ➡

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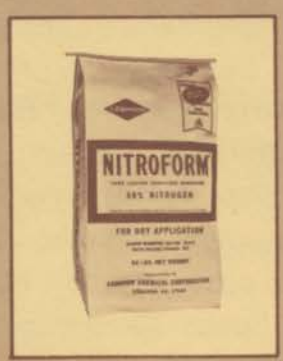

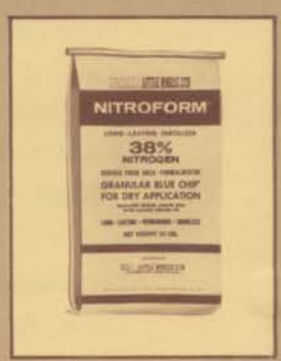

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Up front, two rugged rotary mowers clear an 8-foot swath through the underbrush. All clearly visible from the centre-mounted cab.

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Government News / Business

EPA has set a public hearing for all uses of 2,4,5-T. Date is April, 1974. This means that custom applicators should voice their opinions to their association or organization for representation at this meeting. This long-awaited hearing will largely determine whether this herbicide will be used in the future. Any person or organization wishing to become a party to this hearing must file a response to the statement of issue, which will appear in the Federal Register, with the Hearing Clerk, EPA, Waterside Mall, Washington, D. C. 20460. You've got 30 days to do so after the Federal Register is published.

More on EPA...Regulations and application forms dealing with wastewater discharge permits for agricultural, fishery and forestry activities have been made public. They were required under the 1972 Water Law. Application forms for permits are available from EPA regional offices. $10 per application. Commercial turfgrass and sod producers who use irrigation with a return flow from 3,000 acres or more are subject to the permit requirement. For more details contact an EPA regional office or check the Federal Register, May 3, 1973.

Associations exist for the accomplishment of individual member goals. They also have the ability to solve difficult problem situations through group action. The American Association of Nurserymen is seeking modification of estate tax laws as they apply to small family businesses. Proposals have been presented to charge an income tax on unrealized appreciation at the time of death. This tax liability could easily knock the foundations out of a business and force a sale at an unfavorable time. AAN favors a portfolio investment approach. Under this arrangement the business could be broken up or subdivided without great harm.

Several popular consumer magazines have recently carried articles about jobsite violence. The Supreme Court ruled in February that the Hobbs Act applies to violence in pursuit of illegal ends. It said nothing about violence that occurs in connection with legitimate union activities. Enter Rep. John B. Anderson (R.-Ill.). He's introduced a bill in Congress to extend the Hobbs anti-racketeering law to any type jobsite violence. His version of the bill will carry penalties up to 20 years in jail for violators. The bill has been referred to the House Judiciary Committee.

U. S. Department of Labor reports job safety and health inspections increased substantially in May for the third consecutive month. Records were set at the weekly level and the monthly level. Assistant Secretary of Labor and OSHA boss, John H. Stender, said that 3,344 citations alleging 17,213 violations were issued during the month. Proposed penalties totaled $560,627. Since April 28, 1971 OSHA has made 73,140 inspections resulting in 46,463 citations alleging 232,128 violations with proposed penalties totaling $6,106,870. The government has collected $4,052,344 so far.

Mauget Tree Injection Products of Burbank, Calif. has added two new distributors to further extend their sales network. They are: Moore Tree Co., Dallas, Tex. who will operate in the northern Texas area, and Reinder's Turf & Equipment, Elm Grove, Wisc.

Parker Sweeper Company has announced plans to construct a $1 million manufacturing plant and distribution center near Hattiesburg, Miss. Completion is scheduled for late this year.

Fylking - outstanding as its name!

Internationally tested over 12 years, Fylking has proven to be exceptional — exceptional as a mixer in any lawn seed mixture, exceptional in producing a thick turf. The dense rhizomatous root system knits itself together so weeds cannot penetrate. Low-growing, abundant tillering, fine textured Fylking has greater disease resistance and drought resistance. It greens earlier, is greener in summer, stays green longer into fall. Can be cut low as ¾ inch (even ½ inch) and thrive with less watering.
Check tests shown below:

FYLKING KENTUCKY BLUEGRASS
U.S. Plant Patent No. 2887

1. Comparison of Fylking (right) with another elite bluegrass plant.

2. Cross section shows thick, luxuriant turf, fine leaf texture and brilliant green.

3. 11-day seedling comparison Fylking and another elite Kentucky bluegrass.

4. Leafspot comparison of disease-free Fylking and other elite bluegrass.

Another fine product of Jacklin Seed Company

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Interna

Our 2400A Lo-Boy:

Built for mowing– from the grass up.

And just what is a *mowing* tractor?

A good one is squat and compact, clings to slopes without slipping. It's nimble. Brakes, turns on its own axis and steers like a sports car.

It's geared for every speed from creep-mowing next to fences and obstacles up to nearly 20 mph highway transport. It's versatile – works with a rotary mower, ganged reels, or flail in the rear, and at the same time can handle a cutterbar with its side PTO.

And because grass just won't wait, it's built with the power and strength to get big mowing done in a hurry. Without breakdowns. With a minimum of maintenance.

That's a *mowing* tractor. That's our 46 hp 2400A Lo-Boy.

Your International dealer has all the exact specs, including 9 ft. turning radius; hydrostatic power steering; 8-4 synchromesh shift-on-the-go transmission with Hi-Lo range and straight-line shifting; independent rear PTO, side shaft optional; big 11-inch Dyna-Life® clutch; wet disc hydraulic brakes – a package no other mowing tractor on the market can match.

Phone your dealer soon and let him prove it on your own turf.

We keep getting better at our business to get more of your business.
And keep it.

INTERNATIONAL HARVESTER

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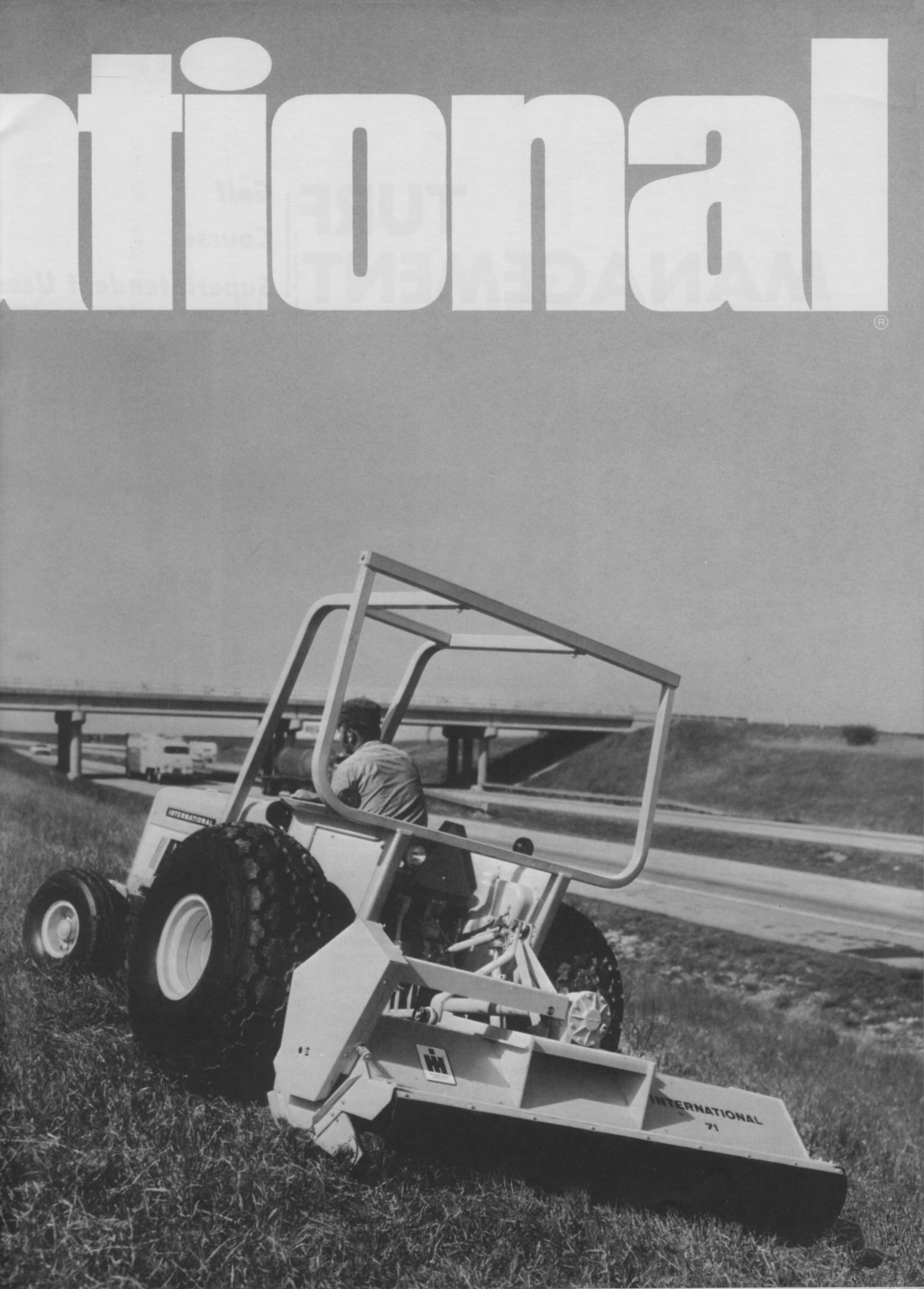


TURF MANAGEMENT | Golf Course Superintendent Uses

Turf records are vital tool in maintaining fairways, greens and tees. Dennison's clipboard (above left) is in steady use as a planning tool. (Above) He also spends much time in his office. As president of Allegheny Mountain Superintendents Assoc., he keeps up to date on the latest in the turfgrass industry.

WHEN it comes to jobs in the "Green Industry," few present such a diverse challenge as that of a golf course superintendent. Consider, for example, the experience of M. S. "Denny" Dennison, who moved into this slot last summer at the 4-year-old Pines Country Club in Morgantown, West Virginia, after 13 years as superintendent at another club.

In his first year at Pines, Denny faced a full measure of management problems, involving people, weather, budgets, equipment, supplies, and schedules . . . as well as the constant pressure of familiar turf diseases and the friendly supervision of a greens committee and more than 250 avid golfers.

Denny Dennison, of course, is only one of more than 10,000 superintendents who have the responsibility of maintaining U. S. golf courses in top condition through most or all of the year. Circumstances vary. It's unlikely that any two superintendents manage their jobs the same way. Still a close look at Denny and his work at Pines show why a golf course superintendent must know not only a great deal about turf, but also a good deal about the role of a diplomat, detective, labor expert, financial planner, and maintenance or construction coordinator.

There are some unusual aspects to the Pines course. It has bluegrass fairways (and Penncross creeping bentgrass tees and greens). It is built on top of an abandoned coal mine, and last summer, a 40-foot shaft suddenly and unexpectedly opened up on the 18th fairway. The club provides living quarters on the course for the superintendent. This is convenient, but it also adds some to the 24-hour-a-day aspect of a superintendent's job — nocturnal pilfering of flags, for instance, can be better controlled when all you have to do is step out of your door to see the action underway.

Correction of mine-shaft holes on the fairway obviously involves more engineering — locust poles, a concrete cap, and seeding of new top soil took care of the 18th hole fairway problem in 1972. But bluegrass on a 6,592 yard course means some special turf maintenance headaches, including intruding annual bluegrass, incipient leafspot and overabundant seed heads. All in all, a man like Denny Dennison has found it useful to do a lot of looking and listening, as he has carried on with a disease control and turf protectant program already underway when he arrived at Pines Country Club.

West Virginia weather is variable. While year round the temperature on the Pines course in Morgantown is 2 to 4 degrees cooler than in Clarksburg, where Denny spent a number of years, the rain and humidity patterns are similar. These help to set the stage and the need for disease prevention in a typical season.

Leafspot, which thrives in cool,

New Ideas To Upgrade Maintenance At Pine Country Club

Course maintenance includes regular equipment checks. Here, Dennison inspects sprayer for proper operation. His staff includes a full-time mechanic, but he makes a personal point of keeping equipment in top condition. He also welcomes company representatives to the course to review technical aspects of products. (Above right(Craig Monroe of Du Pont (l) inspects a green with Dennison. Good management is the interaction of many individual programs all working in harmony.

damp conditions, has been the main turf problem on the Pines Course. To overcome it, Denny has continued periodic treatments with Tersan LSR. In 1972, his crew made five fairway applications at intervals of about three weeks. These repetitive treatments kept disease under control — and at a relatively modest cost in materials.

Dollarspot was more than a threat in 1972. It hit twice on several fairways and it came practically overnight! But Denny was ready and sprayed Tersan 1991 quickly, thereby containing the problem. The fairways came back.

Disease problems on greens and tees are being handled at Pines by regular applications of Tersan LSR in the spring, Tersan 1991 in the summer, and Tersan SP in the fall to stop snow mold. Denny Dennison believes in starting his spray program right after the first mowing. With bluegrass fairways, he expects leafspot problems. Yet, by starting his program early and staying with it, he avoids disaster.

Management of the Pines' turf disease problems is paralleled by Denny's management of the rest of his job. Altogether, he operates on a maintenance budget which is about average for course maintenance at U.S. golf clubs, but the figure is up substantially over a decade ago as golfers have set higher standards for their courses.

Denny figures that 50 percent or more of his budget goes for labor, perhaps 15 to 20 percent for turf chemicals including fertilizer, fungicides, herbicides and insecticides; 10 percent for top soil, top dressing and seed, and the balance for miscellaneous items and supplies such as pilfered flags and poles.

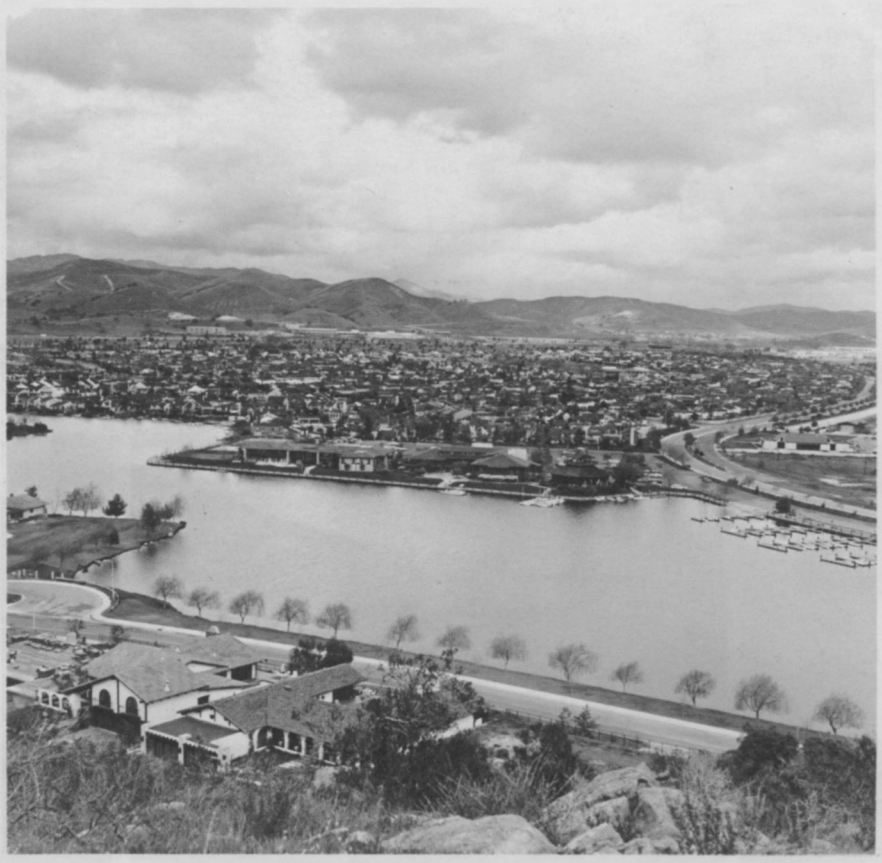
Denny and his 9-man summer crew (he has 2 men year round) work with an impresive array of tractors, mowers, trucks and miscellaneous equipment, which represents an investment of something well over $50,000.

One of their most productive tools is their 100-gallon Hudson sprayer mounted on a turf truckster. With a 16-foot fixed boom, the sprayer applies 50 gallons per acre, and in just about three hours all the greens and tees on the course can be sprayed. It takes a full eight-hour day to cover the 40 acres of fairways with a turf protectant spray such as Tersan LSR or Tersan 1991.

People are another potential problem for the golf course superintendent. Denny has built his 9-man crew mostly through local recruiting. On an hourly basis his labor costs are nearly double what they were 10 years ago at another club. He tries to compensate for this increase by greater use of modern equipment, improved training of his men, and consideration for other possible solutions in the future — in-

(continued on page 64)

Assistant lake manager, Don Danyko, (l, top) inspects application rig. He and lake manager, Bert Dell, selected Casoron for treatment.



The placid waters of this man-made lake provides a continuing source of recreation for the residents of Westlake Village. Prior to treatment, land owners fought sago pondweed, hollyleaf naiad and other aquatic weeds in order to use the water for recreation. Now water is clear and useful by the community.

Chemical First Aid For California Community

WESTLAKE VILLAGE is a private community set in the Santa Monica mountains, just off the Los Angeles, Ventura freeway and about a 40 minute drive from Los Angeles. It is a high-income, multimillion dollar development of spacious homes, townhouses, and apartments, with lavish malls and plazas, shops and restaurants, clubhouse, and marina.

Westlake community life is wholly centered around a 150 acre manmade lake, with over seven miles of waterways and shoreline that include sailing, swimming, fishing and other recreational activities.

Early in the development of Westlake, lake management recognized the urgent need to preserve the beauty and usefulness of the lake. It was necessary to establish a lake maintenance program that would include the control of aquatic weed growth and algae along its shores. A nuisance and a blight, these vegetation pests combine to bring disease and imbalance to the lake ecosystem, to say nothing of immediate and vocal response from lake shore property owners with a substantial investment in the lake community.

Even with a well-planned maintenance program, problem weeds such as sago pondweed, leafy pondweed and hollyleaf naiad were ruining the appearance of the lakefront development. In addition, the weed growth interferred with small boat traffic.

For help with this problem, lake management turned to the University of California. University personnel had been working for several years on the problem of aquatic weed growth in non-flowing water such as lakes, ponds and recreational waters, and had documented tests with several chemical compounds recommended for this use.

Initially several different types of aquatic herbicides were tested with little or no success; however, one of the most effective compounds that had been used in these series of tests was Casoron dichlobenil, a preemergent herbicide.

Dr. Lowell Jordan directs the university's herbicide involvement at the Westlake project. He and other university personnel cooperated in setting up a program for aquatic weed control using Casoron in treatments starting in January 1972.

They treated the area at a rate of 100 lbs. of Casoron G-10 granules per surface acre. The material was applied to alternate strips of shoreline, leaving untreated strips to provide feed for fish and other lake lifeform. This not only helped maintain the lake's ecosystem, but also provided check strips to determine degree of control by the compound.

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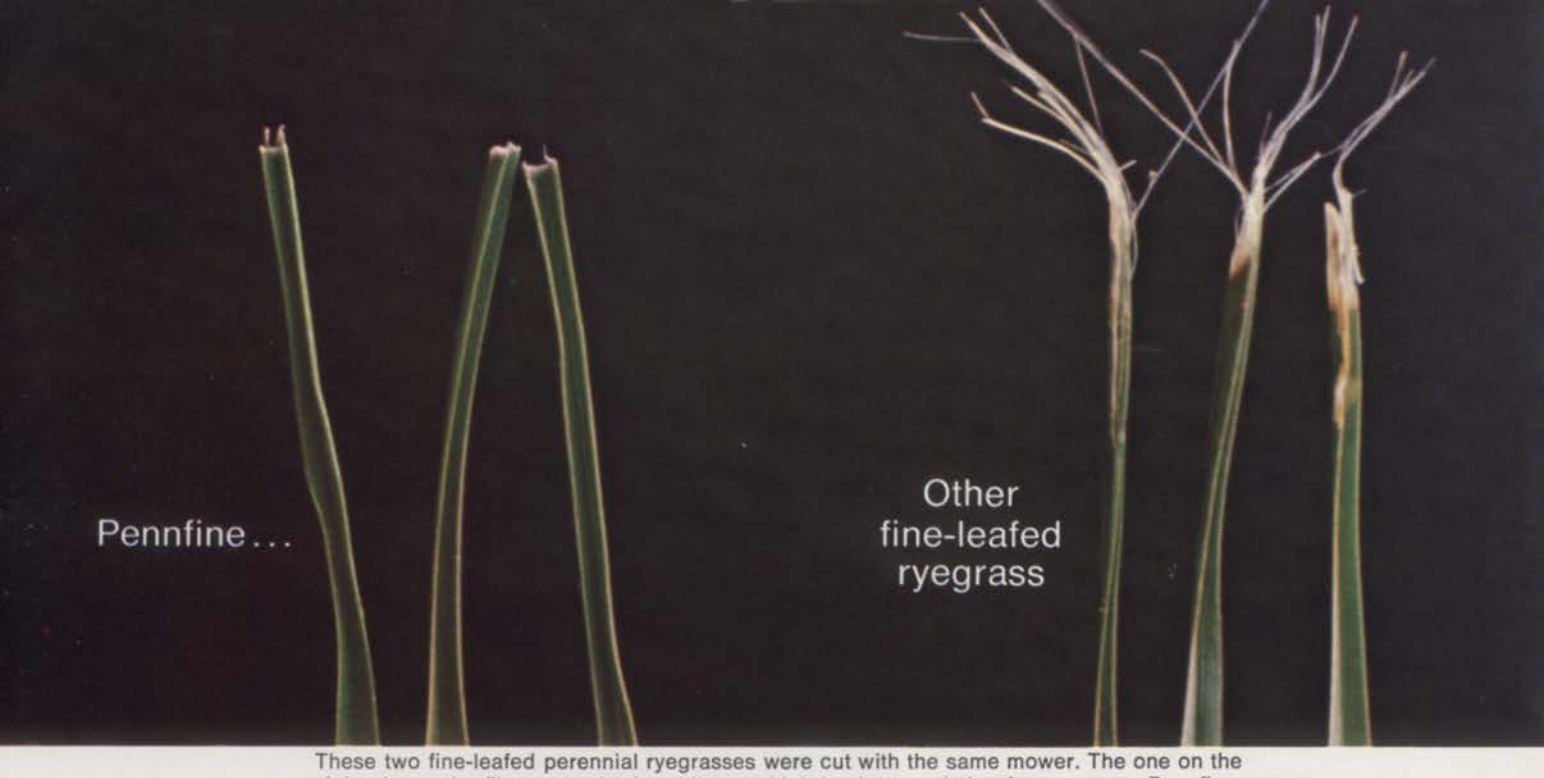

These two fine-leafed perennial ryegrasses were cut with the same mower. The one on the right shows the fibrous "paint brush" top which is characteristic of ryegrasses. Pennfine, on the left, took a smooth, even cut because it was bred for softer, easier to cut fibers.

Pennfine: the clean-cut perennial ryegrass.

All the new fine-leafed perennial ryegrasses are beautiful. Until the mower comes along. That's the moment of truth for ryegrass. And Pennfine is the fine-leafed perennial ryegrass bred specifically for mowability. You can see the clean-cut look of Pennfine in the photo above. You'll see it in your turf, too.

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Developed and released by Pennsylvania State University, Pennfine is the best of the fine-leafed perennial ryegrasses. That's the finding of the trials at University Park, Pennsylvania. Among nine cultivars, Pennfine ranked first in texture, first in density, first in decumbency (low growth), first in tolerance to snowmold and leaf spot. And, of course, first in mowability.

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The remarkable mowability of Pennfine — the result of breeding specifically for soft fibers — is demonstrated in the above photograph. It was also proven by the University Park trials. Over a five-year period, Pennfine averaged 8.3 (of a possible 10) in mowability. The next best score was 7.3, and the other cultivars rated considerably lower.

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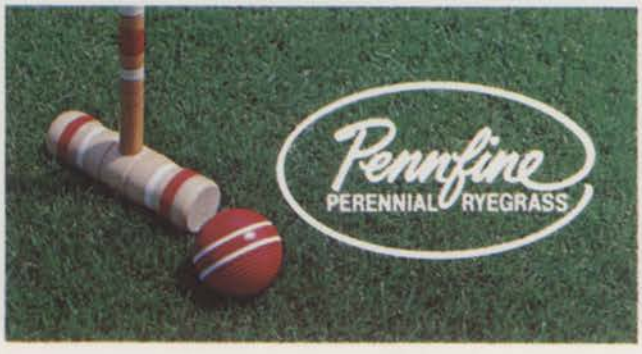

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One Man Two Courses Many Challenges

Cool season bluegrass and warm season bermuda require year-round skill from veteran superintendent Bob Shields

WHEN PEOPLE ask me what I do for a living, I just tell 'em I go to the country club every day," says L. R. (Bob) Shields, golf course superintendent of the Woodmont County Club, Rockville, Maryland.

But the 25-year veteran of golf course management—and 1965 president of the Golf Course Superintendents Association of America — doesn't go to the club to play. "Golf isn't a game to me," he adds. "In fact, I gave it up some years ago. Now golf is my work, and fishing and flying are my recreation."

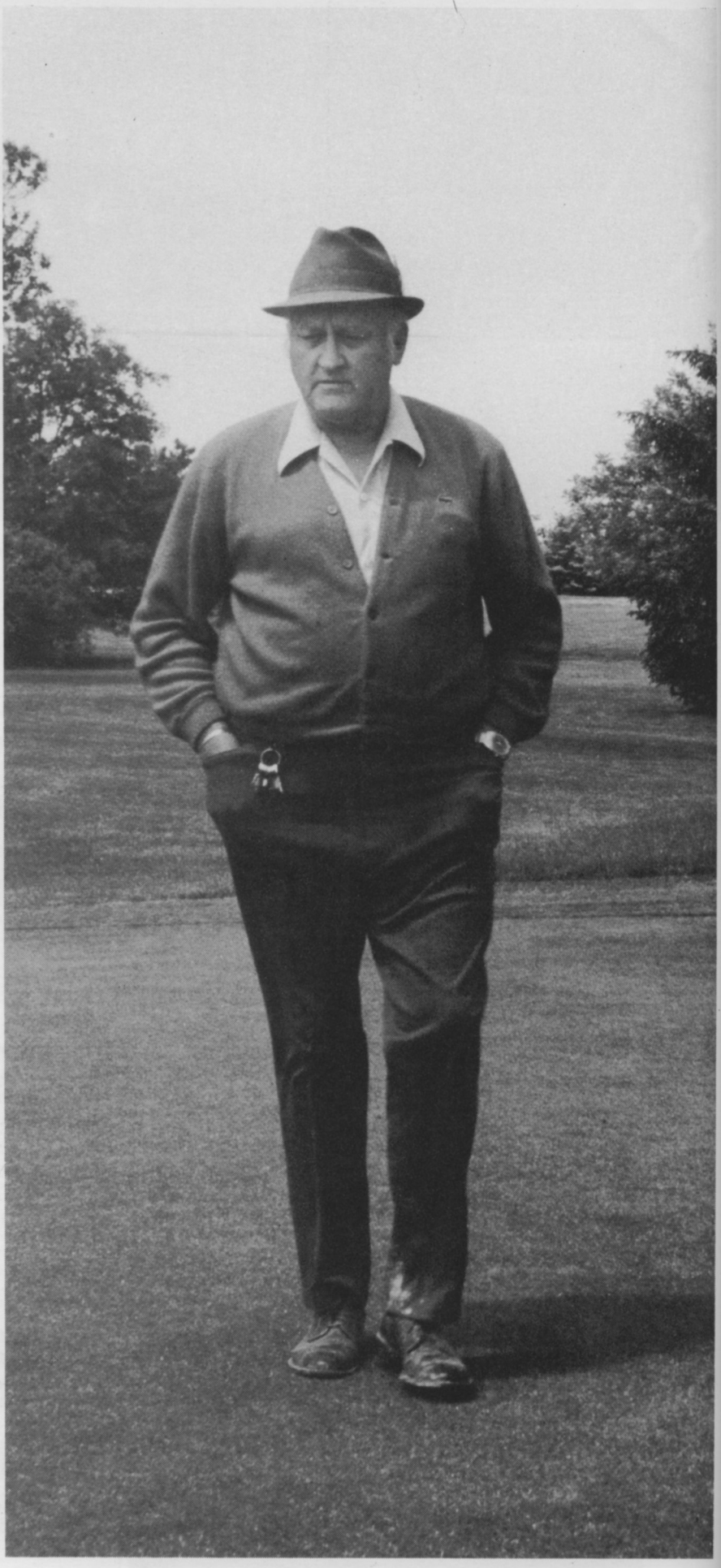
Managing two 18-hole courses and a crew of 18 (plus two part-timers) is work enough for anybody. But the outdoor living, the variety of jobs involved, and continuing challenges have made it the ideal job for Shields. Apparently, the feeling runs in the family; his son, Glenn, plans to follow Shields into golf course management.

Woodmont's location—right on the borderline of north and south—adds to the challenge. The climate is less than ideal for either warm season or cool season grasses; although both can be grown, neither thrives all year long.

BLUEGRASS AND BERMUDA

To compensate for this, Woodmont

(continued on page 20)



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For More Details Circle (101) on Reply Card

Superintendent Bob Shields and son Glenn (l) discuss construction of a new green on Woodmont's north course. Glenn is working as his father's assistant while majoring in turfgrass management at the University of Maryland.

has bluegrass fairways and tees on its north course and bermuda grass on the south course. "The bluegrass goes dormant during the summer," Shields explains, "while the bermuda grass is just greening up in June and July.

Because of the reduced amount of play—and because the ground gets a little soft—we close the southern course during the winter."

Indicative of the tricky climatic conditions, the U3 bermuda grass variety on the south course finally succumbed to winterkill in 1963 after six seasons of struggle. The search for a hardier replacement led Shields to try P16 last year.

"The P16 has been looking good," Shields says. "It came through the winter in good shape. But this was a mild winter, so we may not know for sure for another year."

Greens on both courses consist of bentgrass. Arlington and Congressional bents were the original plantings but all greens have since been overseeded with Pencross many times.

Shields ranks turfgrass management as a favorite part of his job. So having two different courses to manage suits him just fine.

DISEASE CONTROL IMPORTANT

The greatest similarity in managing the two courses is probably in the area of disease control. But the close cutting required and the increasing numbers of players make it a top priority item.

"We cut the bermuda-fairways at ½ inch and the bluegrass at ¾ inch," Shields explains. "That's really too short to cut bluegrass, but the players demand it. All we can do to counteract the close cutting is water the grass, but the lower cut causes stress and weakens the plants. This brings on other problems for us to contend with."

Long experience combined with good results at controlling diseases on greens has made Shields confident that he can control fairway disease problems, too.

"The development of locally systemic fungicides have eliminated a lot of our problems," he says. "Combined with the cool weather, they helped minimize our disease problems last year. And the fact that many products are water-soluble makes for improved control as well as easier application."

EXPERIENCE BREEDS INSTINCT

Experience breeds a kind of instinct for disease control, the Woodmont superintendent believes.

"Sometimes, I apply a treatment when I can just 'feel' a disease is imminent," he says.

"Basically, though, we follow a four-season preventive spray schedule combined with frequent spot checks of the growing turf. Most superintendents follow the preventive approach.

Utilizing the locally systemic fungicide, Acti-dione, he alternates with other similar fungicides to minimize any chance of developing resistance. Shields' year-round spray program has shown good results in warding off diseases like dollarspot, leafspot, rust and others.

"The use of fungicides and good-quality, well-maintained spraying equipment can eliminate a lot of disease problems," he notes.

The hot days of summer are the time when fungicide application becomes critical. "A fungicide is required when the temperature gets above 85 degrees," Shields explains. "We start spraying as soon as we expect the weather to begin getting hot and continue to spray at seven to ten day intervals the rest of the summer for disease control on greens."

Spray applications are normally scheduled for Thursday. "That way, if it rains Thursday, we can still get on the course on Friday and apply a fungicide to help protect the turf over the weekend," he says. "Your greens can suffer badly if a problem develops during the weekend."

MANAGEMENT DIFFERS

Growing two types of grasses requires special guidance for employees who may not be familiar with the different practices required. Mowers are set at the appropriate height for each course and each machine is clearly marked to avoid confusion on the part of the operator. *(Editor's Note: That's a management technique other superintendents may want to adopt.)*

Weeds are as great a nuisance as disease, but Shields has found standard herbicides effective for most weed problems—with the exception of Poa annua. Recently he's been testing tricalcium arsenate for Poa annua control of bluegrass fairways. "It's tricky suff because a little too much will injure bluegrass, too," he says. "But we've gotten pretty good results in our tests so far."

Fertilizer management requires separate treatments for each course. "On the north course, the bluegrass, we apply nitrogen, phosphorous, and potassium in early spring and fall," he explains. "The greatest amount goes on in the fall, during the cool weather.

"We apply some phosphorous on the bermuda fairways in spring and fall, but the bulk of the fertilizer—mostly nitrogen — is applied in the summer when the grass is actively growing. We're trying to minimize the phosphorous applications on both courses, since we believe it encourages Poa annua growth."

SUPERVISION IS IMPORTANT

Aerification and irrigation practices also differ for each course. The southern course's bermuda grass is aerified in the summer, and is less dependent on irrigation. The blue-

(continued on page 74)

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For More Details Circle (107) on Reply Card

Crabgrass Protection From The Sky

SUPERINTENDENT, Roger Schmitt, was on the phone for the second time in a morning that was still only 5:45 a.m. "old."

In the dark hours of the night, he had made a critical management decision. His Crawford Country Club must get the services of a helicopter. Not in a few days, but immediately, he nodded. If his course was to survive the onslaught of the poorest spring on record in mid-America, something had to be done.

It was raining in Robinson, Illinois, and had been for weeks. The swollen Wabash River, just a few miles to the east, was feeding an already flooded Mississippi, attesting to the water-soaked problems facing mid-west golf superintendents this year.

For Schmitt, the constant rain had prevented him from getting equipment out on the course. His spring weed control program, normally initiated weeks before this day of April 26th, had scarcely been started. Moreover, the course had a history of severe crabgrass problems. Fairways were drenched with water, and greens and trees were super soaked. Just try pulling a tractor out on the course and it would mire down in the soft ground.

Increasing the pressure on Schmitt was the PGA Shrine-Robinson Open Golf Classic slated for Crawford County CC on July 9th. With this event little more than two months away, he couldn't chance a crabgrass infestation.

On the other end of the phone line was the Ueding Flying Service, about 30 miles away in Vincennes, Indiana. Schmitt wanted them to apply Dacthal W-75 herbicide to his fairways by helicopter. Ueding had applied Dacthal by air before so they knew there would be no problem with the chemical; however, there was a problem with the weather.

Yesterday, it had rained hard and they couldn't fly. This morning, high winds were adding to the flying problem.

"What about this afternoon?" pleaded Schmitt.

"It's just about impossible," responded the voice on the other end. "It looks like Sunday will be the first available day."

Sunday, April 29, came and Schmitt's anxiety increased. There were already definite signs of crabgrass germination and a few more days of delay could make it too late for preemergent control.

Another call to Ueding assured Schmitt that a chopper would be there to start spraying the Dacthal by noon.

"Once Jim Decker landed the helicopter, I was sure everything would go well," recalled Schmitt. They were using a Bell 47D1 with a simplex low profile spray system. The boom was a toe mounted 18 ft. boom covering a spray pattern of 35 to 40 ft. The nozzles were 10S and 40S with a total of 40 nozzles on the boom. The Dacthal was applied at a rate of 16 lbs. per acre using 16 gallons of water per acre.

"I used Dacthal because I know it gives excellent control," reported Schmitt. "We've used it on this course for the last four years and changed the looks from 50 percent crabgrass to about 10 percent."

MANAGEMENT SUCCESS

All that is history now. It only took about an hour and a half spray all the fairways with Dacthal. And, aside from problems brought on by a continuing wet spring, the course was in excellent condition by

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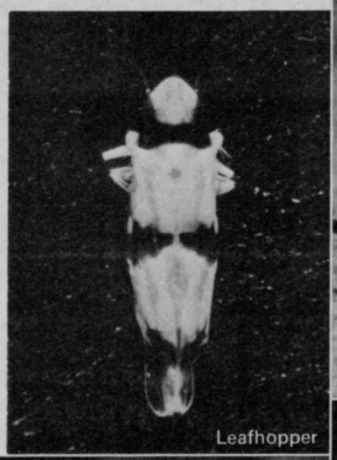
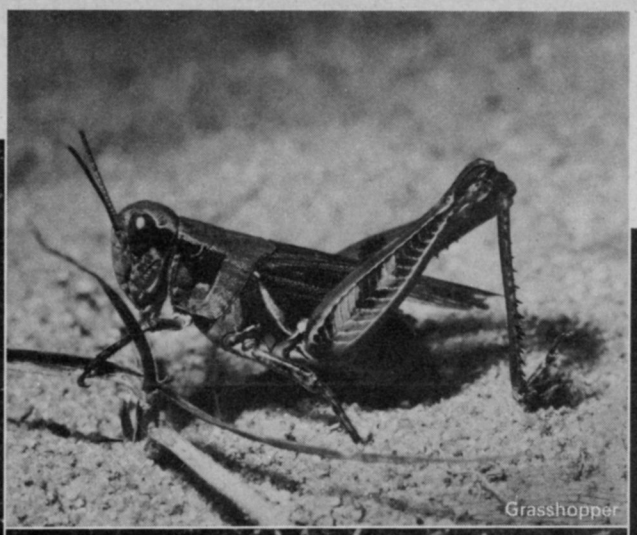

Leafhopper

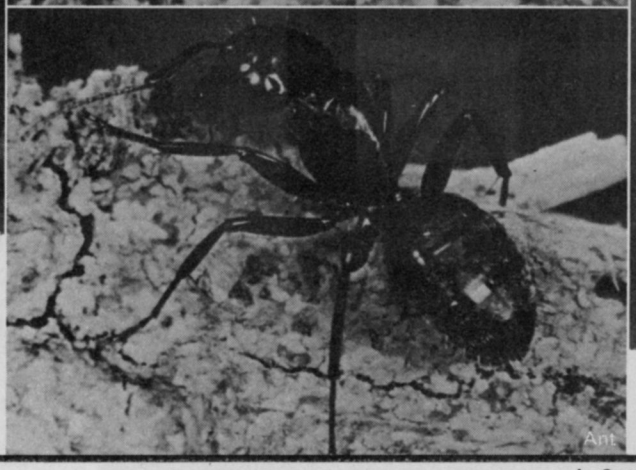

Grasshopper

Hairy chinch bug

Cutworm

Mealybugs

Bagworms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For More Details Circle (128) on Reply Card

Superintendent Ken Ragan makes regular checks on the quality of work being accomplished on his course. This spray crew is using Betasan to control Poa annua, a problem weed at Greenbriar Hills Country Club.

Proven Programs For Quality Turf

TURF quality and appearance are becoming more and more important on golf and country club courses across the country. The results are being reflected in steadily rising turf management costs.

Although per course labor forces to maintain this quality have been decreasing, today's labor represents a great deal more specialization than a few years ago. Equipment, too, while more efficient, costs more to own and operate.

As one typical grounds superintendent put it, "It's getting to the point where club members and management are demanding better greens, tees, fairways—even roughs need to be treated differently!" To meet these demands course and club managers and grounds superintendents are moving to more irrigation, higher soil fertility, better equipment, and selective chemical weed control. This means that superintendents must manage course funds as well as they manage the work being accomplished.

Ragan makes the first pass with this greens mower to make sure everything is in good working order. His grounds management budget has increased only about 15 percent in the last six years.

Not many years ago a typical good quality course estimated its per green maintenance at about $3,000. Today this could run as much as $5,000 or $6,000 on a comparable course.

However, one of the least costly elements, but one of the most important, of a good turf management program is weed control. Today's herbicides are easy to use and highly effective in terms of dollars invested.

Here's what some representative grounds superintendents have to say:

Ken Ragan who manages the grounds at the Greenbriar Hills Country Club in St. Louis, puts it this way: "We have used herbicides here for quite some time. It's been necessary to contain Poa *annua,* goosegrass, crabgrass in the greens. We've been on a Poa elimination program for three years with Betasan and it's proven quite effective.

He reports that some of his old greens were as much as 80 percent Poa. "Under our three year program I've reduced this to 30 percent or lower," he says. And he looks for continued reduction of infestations.

On tees, he has just started a regular weed control program, also using Betasan. "It's applied in the fall and it looks good so far," he says. "I expect to continue with it." He sprays twice a year usually — once in April then again in September — because Poa, for example, germinates both in the spring and fall.

Ragan also has been holding back on his fertilization on the greens where he has Poa problems. "I've developed a combination approach that together, really has done a job on Poa *annua,*" he reports. "By holding back on nitrogen — putting the green on almost a starvation diet, so to speak, the Poa is seriously held down during critical germination periods."

This season, for example, he applied only one pound of N per 1,000 feet of green. Or just enough to feed his bentgrass and hold back germination of the Poa.

Ken attributes the serious Poa influx to the natural environmental conditions that make up and surround the course. "Weeds develop

easily in the rough. It isn't long before golfers and equipment and wind move the seed into the fairways, then into the greens," he says. "Then you get patch spots which soon spread into bigger infestations. Some courses, the older ones usually, are nothing but Poa today."

Competition between clubs is also playing a significant role in ground management according to Ragan. "In large metropolitan areas like ours, for example, there are many courses in direct competition with each other and the quality of the course is a determining factor in their popularity," he suggests. "This is something that has happened in just the last five years. But it is now a considerable factor in members and management supporting a program adequate to maintain a top quality course."

Even so, he says his own grounds management budget has not changed very drastically. "Since about 1967 or '68 our budget has increased only about 15 percent."

He attributes most of this to the rise of hydraulic operating equipment, new greens mowers, new tractors, the move to automatic irrigation on some of his water lines, and renovation of greens. "In short, we're mobilized," he says. "We use back hoes, trench diggers, and tractors that do much of the work that once was done by hand and then very slowly."

Fred Becker, sprayman, and Ed DeRousse, hoseman, listen carefully to the instructions of Ragan on how to spray this green. This manager has made his labor force more efficient through the use of equipment, training and chemicals.

Also Ragan has cut the number of people needed per job. "We didn't cut the payroll, but we made our labor a more efficient force—equipment training, and chemicals have been the key to this."

This trend in turf management practices is supported by the experience of grounds superintendent Gene Griffith of the Shreveport (La.) Country Club. "Weed control is an important part of keeping a course looking good, of course," says Griffith. "We have a lot of goosegrass or what we call crowsfeet, (Editor's Note: These are actually two dif-

(continued on next page)

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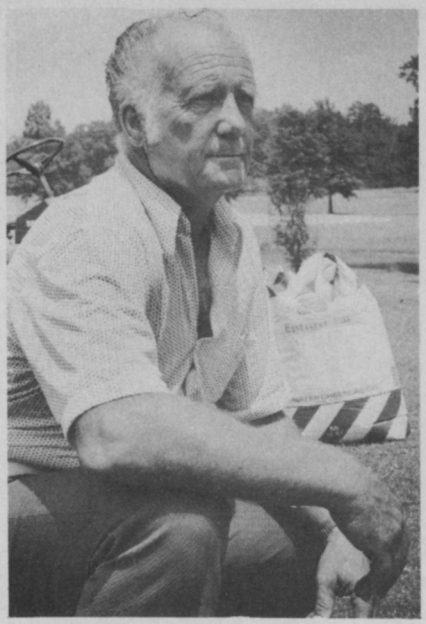


Gene Griffith manages 122,000 square feet of greens and 140,000 square feet of traps, not to mention tees, fairways and roughs.

Sand traps are one of Griffith's worst weed problem areas. Nutgrass, one of the toughest weeds to control, is kept down with applications of Eptam herbicide.

ferent weeds. Locally, they are often referred to as the same plant.) so we have been applying a herbicide to keep our greens clean for the last two years."

The program has worked well for Griffith. "We apply Betasan in the spring — first about February and then again up to about June 1st. It gives pretty good control," he reports. "Our difficulty is the re-infestation — I attribute most of this to my golfers tracking it in from the fairways."

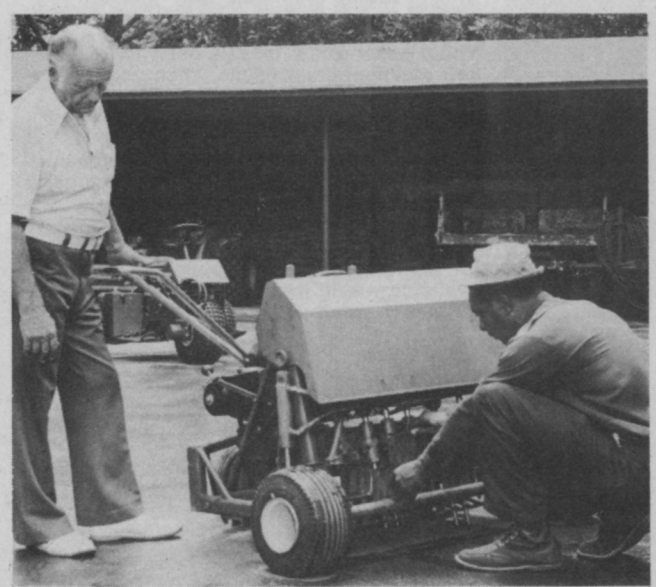
It usually starts breaking through about July or thereafter, according to Griffith. "But, still, that's excellent holding action," he notes.

He doesn't put on a second treatment in the fall as many superintendents do because of his overseeding program on winter grass. "The herbicide tends to injure seedling bluegrasses, so we stick to the two early treatments on established stands — overall about 3 pounds per thousand square feet, as is recommended," he says.

As postemergence spot treatment on his greens, Griffith follows with three applications of MSMA with a hand spray about a week apart. "This picks up 'second generation' crowsfeet very well," he reports.

Sand traps have been another problem area on the Shreveport course. "We have a terrific nutgrass problem here," says Griffith. "The only success I've had — and results have been just about 100 percent — has been with Eptam herbicide. We put it on June, incorporate it with rakes or with our new hydraulic sand trap rig, and almost forget about weeds for the rest of the season." The treatment usually holds weeds out of traps through the fall.

Our program, while it's doing a



Careful attention to equipment maintenance pays off in fewer repairs and longer equipment life. Here, Griffith supervises the fine setting on this core machine.

It's a never ending job keeping a course in top condition. In addition to regular applications of herbicides, spot job spraying goes on throughout the season.

good job is really a holding action, this super notes. What is really needed is decisive action to overcome our weed problems. This means putting together an effective weed control program in all areas—greens, tees, approaches, fairways, and traps.

"Once this is done, you can reduce your program to a **maintenance** operation rather than the more aggressive campaign that we wage against weeds now," he says.

Even so, this 18 hole, 50 year old, short position course is well maintained and manages to attract some of the best golfers and tournaments in the area. "We have 18 holes—122,000 square feet of greens and 140,000 square feet of sand—it's well trapped."

As far as the future is concerned, Griffith sees course maintenance budgets on the increase everywhere. "The demand for better, near-professional-level courses is increasing," he points out. "To get this most clubs are just going to have to spend more—it's as simple as that!"

Ervin Graf supervises an entirely different type of course operation in McFarland, Wisconsin. And he has some very different ideas about course maintenance. His responsibility covers a total of 77 holes spread over four courses.

"Our turf varies quite a bit and so our management programs vary too," says Graf. "Probably most typical of the way we like to handle a course is illustrated by our professional, 36 hole course. It's the newest, starting operation in 1967." Not long after opening, he began to see Poa *annua* start to encroach in some areas on the course and within two years he initiated a chemical control program.

Graf started with Betasan applied both as liquid and a granular on the greens and the trees. "We wanted to see how each worked. Both took care of the weed problem, but we found the granular was better for us. It's easier to apply, it's compatible with our fertilizer, and there is less drift so application is more uniform.

"From our experience, early fall application is the best and with some exceptions we put on the full rate at this time," Graf reports. This program has been highly successful according to Graf, virtually eliminating his poa problem.

But weed control on greens and tees does not completely solve all the problems. "We started putting chemical on our fairways two years ago when we felt Poa was starting to become evident—over 175 acres of fairway on the 36 hole course—and this, too, has been fairly successful," Graf says. On the fairways he applies Balan benefin herbicide

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Graf has adapted this truckster to handle a spray rig. It allows him to pull right across greens without any damage.

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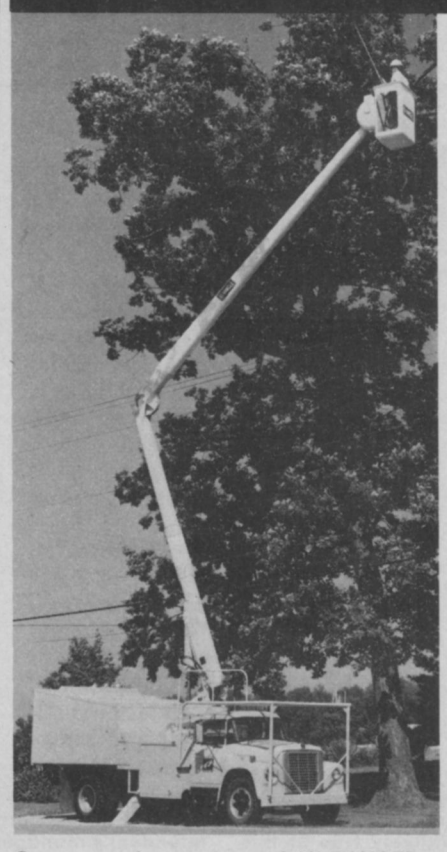

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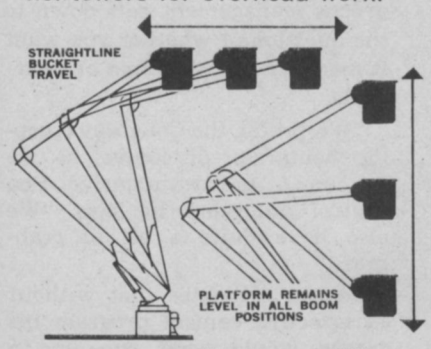

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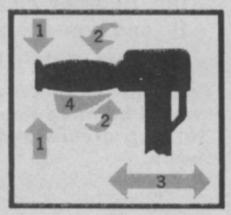

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in combination with fertilizer.

"This is the real key to our success, I think," Graf says. "We apply fertilizer in accordance with precise soil analysis to build up the vitality and strength of our grass. Then we apply herbicides as we need them. This adds up to a highly effective one-two punch that we feel is the answer to many of our management problems here."

On sand traps, Graf has developed a special program that he feels shows a lot of promise. "We have a really serious problem in the sand with quackgrass," Graf says. "The usual weeds are tough enough, but quackgrass is something else!"

Graf devised a program that he indicates knocks out the quack problem without causing any potential chemical residue problem or injury to the greens. "We spray Dowpon and Amitrol T at special rates," he reports. "Results have been good."

"We try to put on about 160 pounds of nitrogen per acre to improve fertility on fairways. We divide that into three applications — spring, summer, and fall," he says. "In the spring we apply about 1¼ pounds of N per thousand square feet in combination with Balan herbicide. In the summer he applies Milorganite, a natural organite fertilizer. In the fall he puts on a final application of 24-0-12.

Fairways are about 50 percent bentgrass, the rest mostly fescue and bluegrass. Graf has mixed feelings about which variety is best. "Bentgrass is really the golfers choice, but we feel bluegrass is much more practical and easier to manage. There are bluegrass varieties coming along that are said to combine the advantages of both."

Costs? Graf states that his present overall budget is about $650,000 for his 77 hole complex. Management budgets are being stressed he points out, because of the competitive factors mentioned by superintendents Ragan and Griffith.

"In the last five years or so we have seen a type of 'boom' in golfing and along with it an increasing public demand for better quality courses," Graf reports.

We find this reflected in public courses, too, where the golfers are demanding the kind of turf quality that once was provided only by the better private clubs. We think we have gone a long way toward providing it here," Graf says. Besides turf protection chemicals and pre-

A Control Program For Poa Annua

To course superintendent Hobart Burgan at Quail Creek Country Club in Oklahoma City, greens management gets down to the question of whether you want it made up of Poa *annua* or bentgrass.

"We prefer the Cohansey creeping bentgrass, of course; so we are on a pretty intensive Poa control program," he says. "We also have quite a bit of crabgrass."

Burgan estimates that without an effective control program his greens would soon run up to more than 80 percent Poa. "We have an effective program applying Betasan right after we aerify and top dress," he says.

"If we didn't keep after it, the seeds start blowing in or tracking in from the fairways and reinfest the greens.

"We have a fairly constant wind here—it averages about 14 miles per hour—so we know there is always some seed blowing in on the greens. This is a problem we have to live with and keep after," Burgan says.

His weed control program is supplemented by a high fertility program.

"We feel the grass is going to benefit more from it and compete better with the weed population," he says. "When you add the chemical program to that, it makes for effective management."

Burgan applies Betasan both in the spring and fall and sometimes in mid-summer if the weather is moist enough to encourage weed growth.

"Usually, though, it's hot and dry, so that we don't need the summer application," he says. "What we try for is season-long control."

His main problem is and probably will continue to be traffic. "Heavy use of the course is the greatest test of our maintenance program," Burgan says. "We feel we are handling the problem adequately today, but work has to be done to improve traffic movement to minimize the wear and tear on the course.

"We also look for better, more refined equipment to make the job of keeping a quality course in good shape with a minimum of time and labor."

Without an effective weed control program, this fairway would be more than 80 percent Poa. Burgan has been able to keep greens and other turf areas relatively free of this weed.

Traffic is the main problem at Quail Creek Country Club. And it's on the increase. Heavy use has tested this superintendent's management skills.

cision fertilizing, Graf attributes this to the variety of better equipment now available.

"On our 36-hole course we have about 175 acres of fairways, 15 acres of tees, eight acres of greens, and about six acres of sand," he says. "On a course of this size and diversity, you require the best in mobilized equipment to keep it operational."

Graf has modernized with such equipment as power sand trap rigs, utility trucksters with attached spray rigs that can pull right across greens without any damage, and other motorized units that have very effectively improved course management efficiency.

All together, these super-intendents have shown that modern turfgrass management is built on proven programs. Whether it be weed control or better fertility, the objective is quality turfgrass. □

Rotary Engine Mower Tested By Irvine Ind.

The grass is not only greener on the Irvine Industrial Complex side of the fence, it's more plentiful. This was the finding of a group of German engineers and an executive of a leading U.S. landscaping supply firm. They were in Southern California recently to test a new German-made Wankel-engine powered rotary lawnmower.

A test team from the Wolf-Geraete Company of Betzdorf, West Germany, accompanied by W. Page Mays, Jr., manager of West Coast research and development for O. M. Scott and Sons, selected the IIC and the Irvine Company's nearby Big Canyon Country Club in Newport Beach for performance and reliability tests on two new mowers. They found that this area is one of the few places in the United States with the soil and climate in which all types of grasses can be grown year around.

Mays said the IIC was selected as a test site because its masterplanned industrial environment includes spacious grass corridors and lush landscaping.

Bill Borden, IIC environmental control manager, observed the tests at the IIC headquarters conducted by Mays and the three Wolf-Geraeta engineers. The team tested two self-propelled Wankel-powered mowers with results Borden termed "very impressive."

The mowers, driven by a 5-horsepower model of the Wankel rotary engine, are mini-versions of the rotary engines used in the Mazda automobile. They have a unique blade system, which unlike rotary-blade mowers, neatly slices grass blades without tugging at them.

Borden noted the revolutionary new mowers sliced through grass in the IIC which was too lush and thick to be handled by a conventional piston-powered rotary mower.

Mays said the mowers tested at the IIC are now in limited production in Germany. The pair tested under a reciprocal agreement between Scott and Wolf-Geraete were operated 50 hours under a variety of conditions, then disassembled to check their internal operation.

Horst Runte, head of the German engineering team, said particular attention was paid to condition of the rotor combustion seal, a critical factor in Wankel engine operation. Runte said advantages of the Wankel mower over conventional models include potentially greater reliability, better power to weight ratio, fewer exhaust emissions, and far less noise and vibration.

Mays said there are no immediate plans to market the Wolf-Geraete mower in the United States.

MILORGANITE
FOR DORMANT TURF

The following advantages of applying Milorganite on dormant turf may fit your maintenance program. Check them carefully.

1. **It works!** Milwaukee Country Club has applied 800 to 1200 lbs. Milorganite per acre each and every winter since 1932. The time — Thanksgiving week, before heavy snow fall on irrigated creeping bentgrass fairways. It works on bluegrass and fescue too.
2. **It Eliminates Spring Feeding!** The grass "greens up" early without over succulent growth. The first calendar year feeding at Milwaukee Country Club is the second week in June — Milorganite, naturally — again since 1932.
3. **It's a Work Saver!** No more worries about wet Spring seasons and lack of Spring labor. November through January applications (slightly earlier in Northern Canada) are made on dormant turf with no golfer interference and when the work load is light.
4. **Delivery is Prompt With Nitrogen at its Highest!** October through December are slow shipping months. Thus, rail cars and trucks can deliver promptly. The same months find production of Milorganite with nitrogen at its highest. It is not unusual to get a half percent bonus over the guarantee of 6%.
5. **Storage is no problem!** Unlike chemicals and some synthetic organics, Milorganite is non-leachable. Its weight and adherence qualities also make it stay in place even on severe slopes.
6. **Earlier greening than waiting until Spring and applying a chemical!** Plot work in Minnesota proves this. In one series of tests conventional applications of other nitrogen fertilizers failed to catch up with early winter applied Milorganite throughout the entire growing season!
7. **It will not increase snowmold!** This disease, or for that matter any other, have never been problems at Milwaukee Country Club, where fairway fungicides have never been used. In plot work, we have purposely applied the excessive rate of 200 lbs. per 1,000 sq. ft. with no snowmold observed. Putting greens should be protected with the fungicide applied dry using Milorganite at 30 to 50 lbs. per 1,000 sq. ft. as the carrier. This has been standard practice for many years in the north country.

CAUTION: The above statements apply to Milorganite only. Disastrous results have occurred through the use of other fertilizer materials on dormant turf in some instances.

ASK YOUR GRASS: Convenience — Savings — Success have sold many clubs on a winter Milorganite application, in lieu of spring feeding. Just ask the grass, your grass, what it thinks of the suggestion. Do it this winter shortly before heavy snow falls.

THE SEWERAGE COMMISSION P.O. BOX 2079 • MILWAUKEE, WISCONSIN 53201

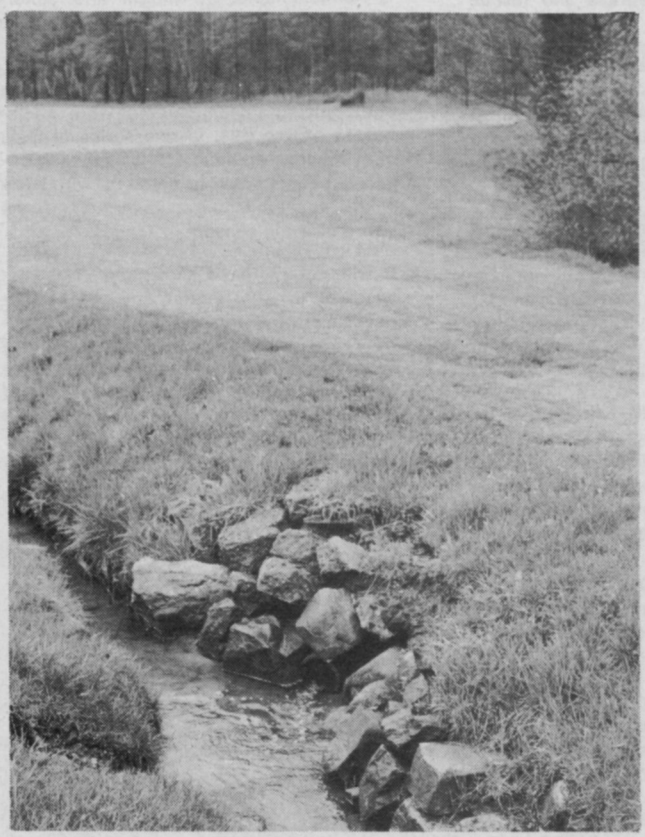
With a long tradition for quality, Preakness Hills Country Club is concerned with drainage. Elmers uses drainage tile and gypsum to keep drainage problems to a minimum.

Elmers illustrates the excellent root growth on this putting green. Gypsum has eliminated the heavy clay compaction in the soil.

The Winning Combination At Preakness Hills

THERE is a lot of tradition at 45-year-old Preakness Hills Country Club, Wayne, N.J.—from the turn-of-the-century club house to a course with a reputation for quality.

But that doesn't mean that golf course superintendent Arthur Elmers can rest on past laurels in providing top playing condition at the par 71, 6400 yard links. The course keeps Elmers and his nine-man crew busy all year.



This drainage ditch below a new 15th hole gives evidence of its past as a swamp. Course combines excellent drainage system with effective soil treatment.

One of his main concerns is drainage. The course is located in a glacial lake area. A big problem. But he has worked out a winning combination of tile drainage and soil treatment during his 14 year tenure at Preakness Hills.

"About 13 years ago," he recalls, "in discussing our drainage problems and heavy clay soil with the state soil conservation service, they suggested application of gypsum and tile system in the low wet areas of our fairways. Gypsum breaks up the clay compaction, thus improving aeration and drainage. We've used it every fall since then and we can report excellent results.

"Every course superintendent knows the difference good drainage makes," Elmers continued. "The putting quality is better. We get a green that holds a shot. The course also holds up better during a summer dry spell.

"We've found gypsum to be an excellent soil conditioner. In addition to breaking up the clay, it's a source of calcium and sulphur. It's inexpensive and it also stretches our budget by making our fertilizers more effective," he said.

Elmers' job isn't just improvement of existing greens. He's completely replaced several greens . . . often from land that was considered swamp. Each improvement has meant better conditions for the club's 225 members.

He's found that gypsum sometimes plays an important part in the ever present fight against disease. "I had a Helminth problem on a green, due to poor drainage," he said, "but it was corrected in three years with nearly a ton of gypsum to the acre in the area over those three years. Now we use a maintenance does of 30-40 lbs. per 1,000 sq. ft. each year."

The Preakness Hills crew uses a drop spreader and Grand Prize Lawn & Garden Gypsum in 50 lbs. bags. Play is not halted for any longer than it takes to spread the mineral.

Preakness Hills boasts some attractive water hazards, too. Elmers reports an added bonus for their gypsum. He says it keeps his ponds clear. □

WEEDS TREES and TURF

1973 TURF PROTECTION DIRECTORY

Pull Out Section

NEW from ProTurf

Victa

Kentucky Bluegrass seed

...and 6 good reasons why its name is "Victa".

1 **Persistent deep blue-green color.** Scotts research and development tested Victa Kentucky Bluegrass for 11 years on plots in Marysville, then at several research substations, and finally at state agricultural experiment stations, in sod fields, on golf courses, and in home lawns all over the country. During those 11 years, Victa proved to have strong summer color which lasted until late fall, in the North. On the West Coast, color lasted throughout the year.

2 **Thick, dense growth with wider and stronger leaf blades.** Victa's spring growth profile is naturally lower than Pennstar, Fylking, or Newport, which makes it ideal for golf turf or any other turf where carpet-like texture is desirable. Lateral instead of vertical growth means Victa fills in bare spots vigorously, choking weeds out. (In tests with equal amounts of Victa and Merion sprigged in two identical 3' x 4' squares of bare earth, Victa covered 80% of its square in eight weeks;the Merion plants covered only 55%.)

3 **Extraordinary stress tolerance.** Victa's low growth profile makes it naturally adaptable to close mowing; Scotts tests found Victa maintains a thick, dense, complete cover even when cut to ¾". Victa performs well under virtually all environmental conditions, including full sun. In addition, Victa is one of the very few bluegrasses to perform successfully in shade mixtures.

4 **Unusual disease resistance.** Aware of most bluegrasses' vulnerability to turf disease, Scotts carefully screened Victa during the testing years, routinely inoculating it with disease during the growing season. The results: Victa proved to be one of only a few bluegrasses in existence with a high degree of resistance to leafspot. Testing in geographic locations around the country showed that Victa also has a good level of resistance to stripe smut, snowmold, mildew, and rust, and more resistance to dollar spot than either Merion or Fylking.

5 **Vigorous germination and growth.** Victa seeds are larger and plumper than most other varieties, which helps the seedling to withstand environmental stress. Victa seed is characteristic of this rugged, very persistent grass—it's excellent quality, with high varietal purity and high yield. In lab tests reporting Victa's characteristics for U. S. Plant Patent #3,156, Victa seed germinated at an unusually fast rate: 41% by the end of the first week, 99.6% in 28 days.

Once seedlings are established, Victa requires less maintenance than many other top bluegrass varieties, yet responds beautifully to fertilizers.

Leafspot damage in May. Common Kentucky Bluegrass on the right, Victa on the left.

6 **Compatibility with other grasses.** In addition to offering excellent turf performance on its own, Victa can blend its good qualities with those of other grasses to achieve a specific purpose. Victa is currently being offered by ProTurf in blends with Windsor, Nugget, Merion, C-26, and other varieties.

ProTurf Victa. A robust new bluegrass with 11 years of rigorous testing behind it . . . from the people who've been developing top-quality seed for over a century.

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Professional management is tied closely with planning and realistic budgets. Whatever your business, it is necessary to plan for the future. This includes detailing what environmental protection chemicals are needed to more completely keep turfgrass and other vegetation free of pests.

It also means keeping abreast of new developments in this ever-expanding field. For these reasons, WEEDS TREES AND TURF Magazine presents this chemical guide for Green Industry managers.

Chemical manufacturers are listed two ways, product groupings and companies manufacturing products within the group, and name of company and products manufactured. Because new products and product lines are constantly changing, omissions of manufacturers and/or products are unavoidable. Your comments and suggestions are invited to help improve future editions.

KEY TO SYMBOLS: Manufacturer (M); Formulator (F); Distributor (D); Grower-Producer (GP).

ALGAECIDES

Applied Biochemists, Inc. (M)
Great Lakes Biochemical Co., Inc. (M)
3M Company (M)
Phelps-Dodge Refining Corp. (M)
Ralston Purina Company (M)

FUNGICIDES

PROTECTANT

J. & L. Adikes, Inc. (F,D)
Agway, Inc. (D)
Chemagro Div. of Baychem Corp. (M)
Chevron Chemical Co. (M)
Diamond Shamrock Chemical Co. (M)
E. I. DuPont de Nemours & Co., Inc. (M)
Elanco Products Company (M)
Elm+R, Inc. (D)
FMC. Corporation, Agri. Chem. Div. (M)
Faesy & Besthoff, Inc. (F)
Foamspray Chemicals, Inc. (F,D)
Great Lakes Chemical Corp. (M)
W. A. Cleary Corp. (M)
Mallinckrodt Chemical Works (M)
Merck Chemical Division (M)
Miller Chemical & Fertilizer Corp. (F,D)
Phelps-Dodge Refining Corp. (M)
Rhodia Inc., Chipman Div. (M)
Rockland Chemical Co., Inc. (F)
Rohm-Haas Co. (M)
The O. M. Scott & Sons Co. (F)
Tuco, Div. of Upjohn Co. (M)

SYSTEMIC

Agway, Inc. (D)
E. I. DuPont de Nemours & Co., Inc. (M)
W. A. Cleary Corp. (M)
Mallinckrodt Chemical Works (M)
J. J. Mauget Co. (D)
Lowden (M)
Merck Chemical Division (M)

EROSION CONTROL

American Excelsior (M)
Conwed Corporation (M)
Greenlife Products Co., Inc. (M)
Hydro-Turf (M)
Masonite Corporation (M)
Miracle Bark, Inc. (M)
Premier Peat Moss Corp. (M)
Weyerhaeuser Company (M)

HERBICIDES

ABATEMENT

Amchem Products, Inc. (M)
American Cyanamid Co. (F)
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E. I. DuPont de Nemours & Co., Inc. (M)
Elanco Products Company (M)
FMC Corporation, Agri. Chem. Div. (M)
Ciba-Geigy Corporation (M)
Mallinckrodt Chemical Works (M)
Monsanto Company (M)
Pennwalt Corporation, Agchem-Decco Div. (M)
Rhodia Inc., Chipman Div. (M)
U. S. Borax & Chemical Corp. (M)
Velsicol Chemical Corporation (M)

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The R. H. Bogle Company (F)
J. J. Dill Co. (F)
The C. B. Dolge Company (F)
Dow Chemical Company (M)
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Nalco Chemical Company (F)
Pennwalt Corporation, Agchem - Decco Div. (M)
U.S. Borax & Chemical Corp. (M)
West Chemical Products, Inc. (F)
Velsicol Chemical Corporation (M)
Occidental Chemical Company (M)

BRUSH

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FMC Corporation, Agri. Chem. Div. (M)
Velsicol Chemical Corporation (M)
Dow Chemical Company (M)
Ciba-Geigy Corporation (M)
PBIGordon Corporation (F)

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Chevron Chemical Co. (M)
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FMC Corporation, Agri. Chem. Div. (M)
W. A. Cleary Corp. (F)
Rhodia Inc., Chipman Div. (M)
Stauffer Chemical Co. (M)
Vineland Chemical Company (M)
Monsanto Company (M)
Diamond Shamrock Chemical Co. (M)
Dow Chemical Company (M)

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PBI Gordon Corporation (M)
Gulf Oil Chemical Co. (M)
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Ciba-Geigy Corporation (M)
Mallinckrodt Chemical Works (M)
Meinhardt Products Div. (M)
Pennwalt Corporation, Agchem - Decco Div. (M)
Rhodia Inc., Chipman Div. (M)
The O. M. Scott & Sons Co. (F)
Stauffer Chemical Co. (M)
Thompson-Hayward Chemical Co. (M)
Vineland Chemical Co. (M)

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Dow Chemical U.S.A. (M)
E. I. Do Pont de Nemours & Co., Inc. (M)
Elanco Products Company
Faesy & Besthoff, Inc. (F)
Hercules, Inc. (M)
Ciba-Geigy Corporation (M)
Mallinckrodt Chemical Works (F)
Masonite Corporation (F)
Miller Chemical & Fertilizer Corp. (F)
Nalco Chemical Co. (F)
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Ralston Purina Company (F)

Some herbicides kill some perennial weeds. Some kill annuals. Some need to be used in combination, or need several applications.

CASORON® herbicide kills the hard-to-kill perennial weeds and annuals with just one simple application a year.

STOP! ALL HERBICIDES CAN BE HARMFUL TO HEALTH AND THE ENVIRONMENT IF MISUSED. READ THE LABEL CAREFULLY AND USE ONLY AS DIRECTED.

The point is, CASORON offers the broad spectrum weed control of the combinations without the problems. It kills more than 60 perennial and annual weeds, and is particularly effective against hard-to-kill perennial weeds such as Quackgrass, Artemisia, Canada Thistle, Curly Dock, Fescue, Leafy Spurge, Orchardgrass, and Russian Knapweed.

It comes in easy-to-use granules or wettable powder. Both are non-corrosive to your equipment. It's the perfect weed killer for ornamental landscaping, industrial and municipal grounds, recreation areas, fruit and nut trees, pre-asphalt treatments and aquatic weeds.

The best time to use it is in late Fall or Winter, and you don't need to cultivate, cut or remove dead weeds before application. That will save you a lot of labor.

How CASORON works.

CASORON's chemical name is dichlobenil. It kills weeds two ways: by inhibiting the growth of annual weeds as they germinate, and by absorption through the roots of perennial weeds, stunting their growth until they die.

Activated by soil moisture, CASORON releases a "Gas Blanket" at a controlled rate, creating a micro-environment in which weeds cannot grow.

CASORON is non-flammable and non-corrosive, and will remain active for storage periods up to two years.

When to use CASORON.

You can apply CASORON about any time during the year:

Annual Weed Control – Apply either in early spring before seeds germinate or after cultivation has removed the growing weeds.

Perennial Weed control –

Casoron kills the

Apply CASORON granules as a soil surface treatment in late fall from November 15 to February 15.

Pre-Asphalt Treatment—Apply CASORON just prior to laying of asphalt.

Aquatic Weeds—Apply CASORON granules early before weed growth begins.

Where to use CASORON.

You can use CASORON just about anywhere you've got a weed control problem:

Commercial nurseries and landscape situations—CASORON controls weeds in over 60 ornamentals including shelterbelts and forest plantings. CASORON can be used under mulching materials for landscape contractors.

Highways, right-of-ways and under asphalt—Along fence rows, guard rails, around sign posts. Pre-asphalt applications in parking lots, recreation courts, etc. It is also registered for aquatic weed control and fruit and nuts.

How to apply CASORON.

CASORON is available as a granular formulation; G-4 (4% granules) and G-10 (10% granules). CASORON G-4 is available in two mesh sizes, 8/16 and 16/30 (CASORON G-10 in 8/16 only). These granular formulations may be applied with any equipment that gives uniform distribution including hand spreader or vehicle-mounted spreader.

CASORON W-50 (50% wettable powder) can be applied with any type liquid sprayer that gives uniform distribution.

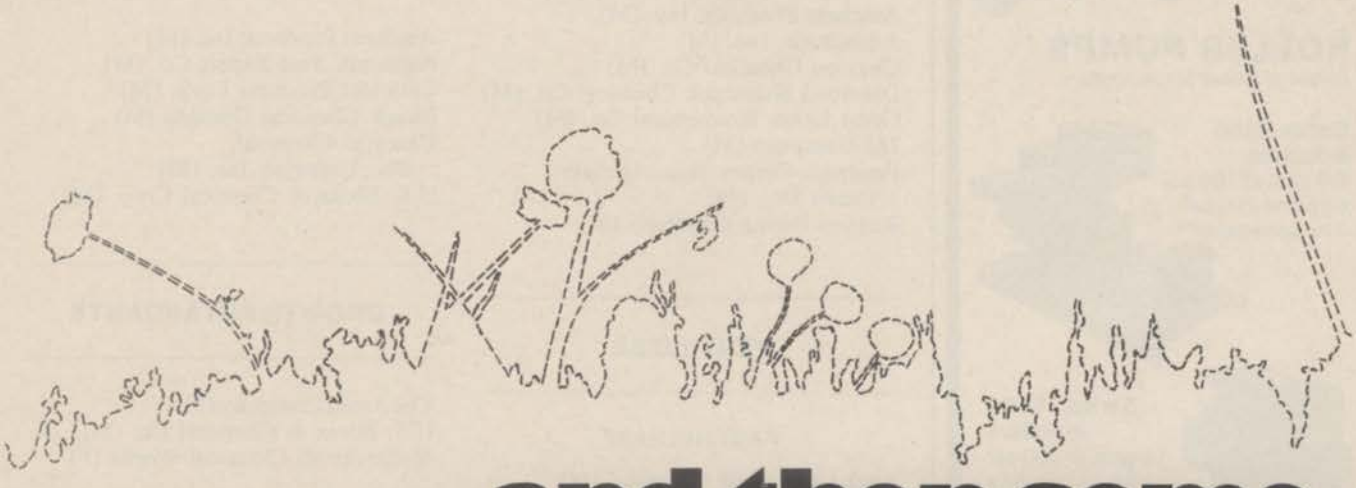
CASORON and the environment.

CASORON can be applied over growing ornamentals without any contact damage to the foliage. CASORON will not leach downward into the soil, and it will not travel laterally into adjacent areas not intended for treatment. CASORON remains active in the soil for a period of only 4-7 months, assuring full season weed control. Once CASORON's killing power is dissipated, it becomes an inert soil ingredient and offers a clean soil environment.

Years of good results.

CASORON has been in use for over 8 years. It has been used in nurseries, fruit orchards, aquatic and industrial areas. In many cases, CASORON alone replaced 3 or 4 herbicides used in combination, often with multiple applications each season. Now those CASORON users are back to a regular weed killing routine—once a year and forget it. No hoeing, no hand weeding, no combinations, and no repeat applications.

hard-to-kill...



...and then some.

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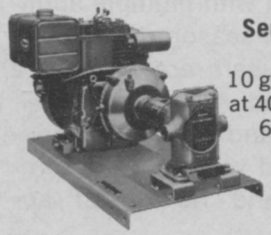
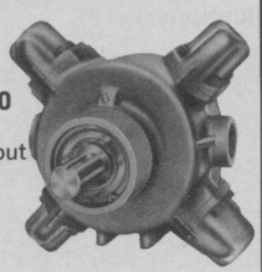


Series 5200 Big Twin
10 gpm output at 400 psi with 6 hp engine



Series 5400 4-Cylinder
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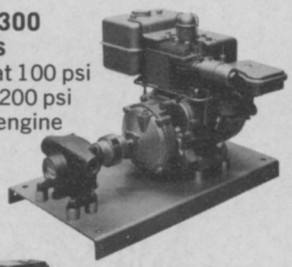

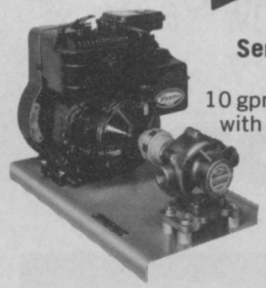

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Vineland Chemical Co. (M)
Chevron Chemical Co. (M)

AQUATIC

Amchem Products, Inc. (M)
Aquashade, Inc. (M)
Chevron Chemical Co. (M)
Diamond Shamrock Chemical Co. (M)
Great Lakes Biochemical Co. (M)
3M Company (M)
Pennwalt Corporation, Agchem-Decco Div. (M)
Ralston Purina Company (M)

FERTILIZER

FAST RELEASE

Agrico Chemical Company (M)
Agway, Inc. (M)
Ferti-Feeder, Inc. (F)
Greenlife Products Co., Inc. (F)
Hydro Turf (F)
International Spike, Inc. (F)
J. J. Mauget Co. (F)
Miller Chemical & Fertilizer Corp. (M)
Plant Marvel Laboratories (M)
Premier Peat Moss Corp. (F)
The O. M. Scott & Sons Co. (M)
Sierra Chemical Co. (M)
Sudbury Laboratory, Inc. (F)
USS Agri-Chemicals (M)
Vistron Corporation (M)

SLOW RELEASE

Agrico Chemical Company (F)
The R. H. Bogle Co. (F)
E. I. Du Pont de Nemours & Co., Inc. (M)
Elanco Products Company (F)
Ferti-Feeder (F)
Hercules, Inc. (M)
Occidental Chemical Company (F)
Ra-Pid Gro Corp. (F)
Rockland Chemical Co., Inc. (F)
S & D Products, Inc. (F)
The O. M. Scott & Sons Co. (F)
Sewerage Commission of the City of Milwaukee (M)
Sierra Chemical Co. (F)
Water-In, Inc. (F)
Swift Chemical Company (M)

ORGANIC NITROGEN

Milwaukee Sewerage Commission (M)

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Dow Chemical U.S.A. (M)
Fergurson Fumigants, Inc. (M)
Great Lakes Chemical Corp. (M)
Shell Chemical Co. (M)
Stauffer Chemical Co. (M)

GROWTH REGULATORS

Amchem Products, Inc. (M)
Asplundh Tree Expert Co. (M)
Colloidal Products Corp. (M)
Merck Chemical Division (M)
Uniroyal Chemical, Div. Uniroyal, Inc. (M)
U.S. Borax & Chemical Corp. (M)

GROWTH RETARDANTS

The Ansul Company (M)
U.S. Borax & Chemical Co. (M)
Mallinckrodt Chemical Works (F)

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Sandoz-Wander, Inc. (M)
Thompson-Hayward Chemical Co. (M)

VIRUS

Sandoz-Wander, Inc. (M)

Pennstar
Kentucky Bluegrass.

Perhaps the best all-around turfgrass available today.

Developed by Pennsylvania State University, Pennstar is strong in every category: disease and drought resistance, compatibility, persistence, ease of management, and adaptability. Here's why we call Pennstar the best improved bluegrass there is:

Highly resistant to stripe smut, rust and leaf spot. Stripe Smut sporulates in May or June, shredding individual leaves. Field trials show that, while Merion is quite susceptible, Pennstar is highly resistant. It's also highly resistant to rust: rated on a scale of 0 (best) to 10 (worst), test data give a 1.7 rating to Pennstar vs. 8.7 for Merion. University tests also show Pennstar to be significantly more resistant to leaf spot than some improved varieties.

Medium color, good density, easy to manage. Pennstar persists at moderate-to-low fertility levels. It doesn't over-react to higher fertility. Because of its decumbent growth, Pennstar can tolerate close mowing. It can withstand drought conditions better than some other Kentucky Bluegrass varieties. And, with its pleasing medium bluegrass color, Pennstar is ideal for blending with other varieties. In mixtures, it's neither too dark nor noticeably light.

No excess thatch after 11 years. Pennstar does not produce damaging quantities of thatch. In tests at Penn State, plots of Pennstar torn up after 11 years revealed no excess thatch. (No dethatching had been done in that entire period.)

What else do you want to know about Pennstar? If you'll send us the coupon, we'll give you complete information on perhaps the best all-around turfgrass available today.

Dennis Lee Wagner, Superintendent, Homestead Executive Golf Course, Spring Lake Heights, New Jersey

"You can really see the difference Pennstar makes. We've used Pennstar on fairways, greens and around the clubhouse and condominiums. Our results have been *very good* with Pennstar—it's held up real well with almost no fertilizing and very little watering. It's given us a real thick stand of grass, the color is a beautiful, lush green and I haven't noticed any disease at all. And people are saying that Homestead really looks like a golf course again."

TO: Pennstar Kentucky Bluegrass
P.O. Box 923, Minneapolis, Minnesota 55440

☐ Please send me prices, availability, test information, purity and germination data on Pennstar Kentucky Bluegrass. ☐ Names of distributors.

Name _____

Club or Company _____

Address _____

City _____ State _____ Zip _____

CONTACT

Gabriel Chemicals Ltd. (F)
Foamspray Chemicals, Inc. (F)
S. B. Penick & Co. (F)
Prentiss Drug & Chem. Co., Inc. (F)
Shell Chemical Co. (M)
Union Carbide Corp. (M)

PROTECTIVE

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Agway, Inc. (F)
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Chevron Chemical Co. (M)
The C. B. Dolge Co. (F)
Dow Chemical U.S.A. (M)
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FMC Corporation, Agri. Chem. Div. (M)
Faesy & Besthoff, Inc. (F)
Foamspray Chemicals, Inc. (F)
Gabriel Chemicals Ltd. (F)
Lethlin Products Co., Inc. (F)
Ciba-Geigy Corporation (M)
J. J. Mauget Co. (F)
Miller Chemical & Fertilizer Corp. (F)
Prentiss Drug & Chem. Co., Inc. (M)
Ralston Purina Company (F)
Redwood Chemical, Inc. (F)
Rockland Chemical Co., Inc. (F)
The O. M. Scott & Sons Co. (F)
Shell Chemical Co. (M)
Stauffer Chemical Co. (M)
Thompson-Hayward Chemical Co. (M)
Tuco, Div. Upjohn Co. (M)
Union Carbide Corp. (M)
Uniroyal Chemical,
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USS Agri-Chemicals (F)
Velsicol Chemical Corp. (M)
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Chevron Chemical Co. (M)
FMC Corporation, Agri. Chem. Div. (M)
Ciba-Geigy Corporation (M)
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Chemagro Div. of Baychem Corp. (M)
Great Lakes Chem. Corp. (M)
Ciba-Geigy Corporation (M)
Occidental Chemical Company (M)
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Prentiss Drug & Chem. Co., Inc. (M)

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KENTUCKY BLUEGRASS, certified

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Agricultural Alumni Seed
Improvement Assn., Inc. (GP)
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Cowbell Seeds (GP)
Ferry-Morse Seed Co. (GP)
Jacklin Seed Co.,
Div. Vaughan-Jacklin Corp. (GP)
Lofts Pedigreed Seed, Inc. (GP)
Merion Bluegrass Association (GP)
Nugget (Pickseed West) (GP)
Twin City Seed (GP)
Warren's Turf Nursery (GP)
Rudy Patrick (GP)
Northrup King (GP)

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Melthor Industries, Inc. (GP)
Rudy Patrick (GP)
Loft's Pedigreed Seed, Inc. (GP)
Jacklin Seed Co.,
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FESCUE

Cowbell Seeds (GP)
Oregon Chewings and
Creeping Red Fescue Comm. (GP)
Rudy Patrick (GP)

Why let algae and water weeds limit your pond use?

OPEN THE WAY TO A PROPER WEED-FREE POND ENVIRONMENT WITH

HYDROTHOL 47®

Without proper control, waterweeds and algae can:

1. Restrict or clog irrigation equipment.
2. Reduce water holding capacity of the pond.
3. Create an imbalance in fish population.
4. Limit swimming enjoyment.
5. Tangle fishing lines.

THIS DOESN'T BELONG!

Hydrothol 47 controls many weeds and algae. It provides the proper balance to assure maximum use of this important resource. It helps reduce maintenance, lowers operating costs, increases efficiency and improves the aesthetic value of the pond.

Hydrothol 47 is easy to apply. It is effective, fast acting and biodegradable. It does not accumulate in fish or build up in water or on lake bottoms. It controls most algae, including Chara.

**For the protection of swimmers and wildlife, read the label.*

Specify Hydrothol 47 from your farm supplier, or, for more information, write:

Be sure to ask for the AGRI-FIELDMAN Sponsored Research Bulletin on Aquatics which appeared in the March issue.

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AGCHEM-DECCO DIVISION
1713 SOUTH CALIFORNIA AVENUE
MONROVIA, CA. 91016 · (213) 358-1838
111 Windsor Dr. Oakbrook, Ill. 60521 · (312) 325-6120

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IS THE SELECTIVE KILLER

NOW YOU CAN ATTACK THE WHOLE SPECTRUM OF BROADLEAF WEEDS USING TRIMEC® TURF HERBICIDE.

TRIMEC TURF HERBICIDES ARE EFFECTIVE!

We haven't found a broadleaf weed Trimec Turf Herbicides will not control. We're still experimenting . . . still looking for the Trimec-resistant broadleaf weed, but so far we haven't found it.

TRIMEC TURF HERBICIDES ARE ECOLOGICALLY SOUND!

The unique action on the combined biodegradable components of Trimec are so effective you need less herbicide per square foot to kill undesirable broadleaf weeds. Trimec Turf herbicides have a low toxicity to wild life and fish. Trimec is non-volatile and will not damage ornamental shrubs, trees and sensitive grasses when directions are followed.

TRIMEC TURF HERBICIDES ARE ECONOMICAL!

Trimec Turf Herbicides will control more weed species per dollar. Controls even tough, hard-to-kill weeds. Trimec Turf Herbicides mix readily in all kinds of water, are easy to use, effective and economical.

for further information contact:

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Phone: 913/342-8780

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- Low-cost preventive
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- Compatible with most major turf insecticides

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Lofts Pedigreed Seed, Inc. (GP)
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Grasslyn, Inc. (GP)
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Colloidal Products Corp. (M)
Foamspray Chemicals, Inc. (M)
Loveland Ind., Inc. (M)
Rohm-Haas Co. (M)
Stull Chemical Co. (M)

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KDM Company (M)
Stull Chemical Co. (M)

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Aquatrols Corp. of America (M)
W. A. Cleary Corp. (M)
Miller Chemical & Fertilizer Corp. (M)
Nursery Specialty Products (M)

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Aquatrols Corp. of America (M)
ICI America, Inc.,
Atlas Chemical Div. (M)
KDM Company (M)

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Atlas Chemical Div. (M)
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E. I. Du Pont de Nemours & Co., Inc. (M)
Miller Chemical & Fertilizer Corp. (M)
Rohm-Haas Co. (M)
Thompson-Hayward Chemical Co. (M)
Dow Chemical Company (M)

STABILIZERS

Colloidal Products Corp. (M)

WETTING AGENTS

Aquatrols Corp. of America (M)
Colloidal Products Corp. (M)
W. A. Cleary Corp. (M)
Parco Div., National Foam System, Inc. (M)
Water-In, Inc. (M)

PRESERVATIVES

Merck & co., Inc. (M)

SOIL CONDITIONERS

American Bioculture, Inc.,
Bio-Turf Division (M)
BASF Wyandotte Corp. (M)
The C. B. Dolge Company (M)
Greenlife Products Company (M)
Johns-Manville Corp. (M)
Masonite Corporation (M)
Miracle Bark, Inc. (M)
Dil-Dri Corporation (M)
U. S. Gypsum (M)
Water-In, Inc. (M)
Zonolite, W. R. Grace & Co. (M)

THICKENING AGENTS, SPRAY

Diamond Shamrock Chemical Co. (M)
Dow Chemical U.S.A. (M)
Great Lakes Chemical Corp. (M)

CARRIERS

CLAY

Floridin Company (M)

SUSPENDING AGENTS

Loveland Industries, Inc. (M)

TRACE ELEMENTS

Creative Sales (F)
W. A. Cleary Corp. (M)
J. J. Mauget Co. (F)
U. S. Borax & Chemical Corp. (M)

MISCELLANEOUS COMPOUNDS

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The C. B. Dolge Co. (M)

SOIL, POTTING

Premier Peat Moss Corp. (M)

TREE KILLERS

Dow Chemical U.S.A. (M)
Rhodia Inc., Chipman Div. (M)

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Asplundh Tree Expert Co. (M)
Samuel Cabot, Inc. (M)
U. S. Borax & Chemical, Inc. (M)

TURF COLORING COMPOUNDS

The C. B. Dolge Co. (M)
The Gregg Co. (M)
W. A. Cleary Corp. (M)
Mallinckrodt Chemical Works (M)
Virginia Chemicals, Inc. (M)

ALPHABETICAL LISTING OF SUPPLIERS

WEEDS TREES and TURF Advertisers Listed In Boldface Type

A

Abbott Laboratories, Abbott Park, North Chicago, Ill. 60064
Dipel, Bacillus thuringiensis, insecticide, biological, selectively controls, lepidoptera insect larvae

J. & L. Adikes, Inc., 182-12 93rd Ave., Jamaica, New York 11423
Gro-Well®, insecticides, herbicides, fungicides, (Liq., Wp, and Gran.)
Fertilizer
Adelphi Kentucky Bluegrass, seed
NK-100 Perennial Ryegrass, seed
NK-200, seed

Agrico Chemical Company, P.O. Box 3493, Tulsa, Oklahoma 74101
Country Club fertilizers and weed or insect control products for turfgrass and gardens

Agricultural Alumni Seed Improvement Association, Inc., P.O. Box 158, Romney, Ind. 47981
Sodco, Kentucky bluegrass seed

Agway Inc., P.O. Box 1333, Syracuse, N.Y. 13201
Port A Bin, bulk handling of fertilizer at location
Fertilizer
Environmental protection chemicals, herbicides, insecticides, fungicides

Achem Products, Inc., Brookside Avenue, Ambler, Penn. 19002
Amitrol-T amitrole, herbicide, postemergent
Amizine™ amitrole + simazine, herbicide, postemergent
Brominal bromoxynil, herbicide, postemergent
Emulsamine® E3 (oil soluble amine 2, 4-D), herbicide, postemergent
Fenac, herbicide, bareground
Fenavar® liquid and granular, herbicide, bareground
Weedar® (amine, 2, 4-D), herbicide, postemergent
Weedazol amitrole, herbicide, postemergent
Weedone® LV4 (ester 2, 4-D), herbicide, postemergent
Weedone 2, 4, 5-T, herbicide, postemergent, woodplants
Weedone 170 2, 4-D + 2, 4-DP ester, herbicide, postemergent, woody plants
Weedone 638 2, 4-D, herbicide, postemergent, broadleaf
Weedone 2,4,5-TP (Silvex), herbicide, postemergent
Super D Weedone, herbicide, postemergent, lawns
Super D Weedone, herbicide, postemergent, foam
3D Weedone, herbicide, postemergent, turf weeds
Nu-Lawn™, herbicide, postemergent, broadleaf
Weedone, herbicide, premergence crabgrass control
Aqua-Kleen® 2,4-D Granular, herbicide, aquatic, postemergent
Lo-Drift™, Spray additive
Lo-Scent, odor inhibitor
Tre-Hold®, sprout inhibitor
Oramental Weeder (granular), herbicide, preemergent

American Bioculture Inc., Bio-Turf Division, P.O. Box 424, Glen Head, L.I., New York 11545
Bio-Turf, soil conditioner, bio-chemical 100% organic flocculating agent

American Cyanamid Co., Agricultural Div., P.O. Box 400, Princeton, N.J.
Abate® 4E, insecticide, mosquito larvae
Amino Triazole Weed killer, herbicide, abatement
Cyanogas®, fumigant, rodenticide
Cygon®, insecticide
Malathion ULV concrentrate, insecticide
Thimet® phorate, insecticide, liquid

American Excelsior Company, P.O. Box 5067, Arlington, Texas 76011
Curlex™ Blanket, permanent vegetative cover, seeded areas, retains moisture, maintain temperature, provide shade

The Ansul Company, 3385 Airways Blvd., Memphis, Tenn. 38116
Ansar 529HC (MSMA), herbicide selective contact
Phytar 560 (Cacodylic Acid), herbicide non-selective contact
Retard (Maleic Hydrazide), growth retardant

Applied Biochemists, Inc., 5300 W. County Line Rd., Mequon, Wis. 53092
Cutrine®, algaecide for potable water reservoirs; farm, fish and fire ponds; lakes; fish hatcheries
Cutrine® Granular, algaecide for specific control of chara in potable water reservoirs; farm, fish and fire ponds; lakes; fish hatcheries
Swimtrine®, algaecide for swimming pools

Aquashade, Inc., Box 117, Dobbs Ferry, New York 10522
Aquashade, aquatic growth control

Aquatrols Corp. of America, P.O. Box 385, Delair, N.J. 08110
Aqua-Gro (technical), granular, Aqua-T, blended soil wetting agent for improved wetting and penetration
Stoma-Seal, anti-transpirant, reduce wilt
Aqua-GRO (100% liquid), Aqua-T (100% liquid), Aqua-GRO Granular (20% active on vermiculite), blended soil wetting agents for improved wetting, penetration, and drainage

Asplundh Tree Expert Co., 50 East Hamilton St., Chalfont, Pa.
Sprout Gard, tree dressing inhibitor
Weed and grass killer, herbicide, bareground

Atlas Chemical Industries, Division of ICI America, Wilmington, Delaware
Atlox®, emulsifier, non-ionic and anionic-nonionic
Atplus®, surfactant, non-ionic
Atmul®, surfactant, non-ionic
Gro-Safe® activated charcoal, a soil amendment for reducing effects of organic pesticides

B

BASF Wyandotte Corporation, 1609 Biddle Ave., Wyandotte, Michigan 48193
Turface, soil amendment

The R. H. Bogle Company, P.O. Box 588, Alexandria, Virginia 22313
Bo-Rid, herbicide (bareground)
Aceto Diuron, herbicide (bareground)
Aceto Dalapon, herbicide (bareground)
Bromacil herbicides, herbicide (bareground)
Bo-Rid Granulars, herbicide (bareground)
Bo-Rid K.O. Phenoxies, herbicide weed and brush
Bo-Rid SRC, herbicides (slow release)
Aceto, herbicides (bareground)

E. F. Burlingham & Sons, P.O. Box 217, Forest Grove, Oregon 97116

QUALITY,
Performance,
Dependability...

COLT.
One word.
You know it.
Quality, performance, dependability are all there.

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One word.
Same story.
Jacklin Seed Company is one of the world's largest producers of bluegrass and other grasses, a name synonymous with quality, performance and dependability. When ordering seeds, specify JACKLIN SEED.

JACKLIN PRODUCES:
Merion Kentucky bluegrass
0217® Brand Fylking Kentucky bluegrass
Nugget Kentucky bluegrass
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Delta Kentucky bluegrass
Geary Kentucky bluegrass
Park Kentucky bluegrass
Six Kentucky bluegrass
Troy Kentucky bluegrass
Norlea Perennial ryegrass
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And has produced on a contract basis:
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N.K. 100 Perennial ryegrass
N.K. 200 Perennial ryegrass
Pelo Perennial ryegrass
For these quality Jacklin seeds see your local wholesale seed distributor. Jacklin is also a prime* contract producer of:
Warren's A-34 Kentucky bluegrass
O.M. Scott's Windsor Kentucky bluegrass
Adelphi Kentucky bluegrass

Jacklin has built a reputation for fine quality and service over 30 years. You can count on purity of content, high quality and sure germination.

*Available only through breeder and owner outlets.

Jacklin® Seed Company
Division of the Vaughan-Jacklin Corporation

Bonnieblue Kentucky Bluegrass, seed

C

Samuel Cabot, Inc., One Union St., Boston, Mass. 02108
Tree healing paint, heals tree wounds, stops rot, prevents sap evaporation

Chemagro Division of Baychem Corp., P.O. Box 4913, Hawthorn Rd., Kansas City, Missouri 64120
Dyrene®, fungicide
Baygon® 70% WP, insecticide
Dasanit® 15G and SC, nematicide
Dylox® 80% WP and LS, insecticide
Guthion® WP and SC, insecticide
Dexon®, fungicide
Baytex®, insecticide
Di-Syston®, insecticide
Metasystox®-R, insecticide
Entex®, insecticide

Chevron Chemical Co., 200 Bush St., San Francisco, Calif. 94120
Monitor 4 dimethyl phosphoramidothioate, insecticide
Dibrom 8 EC naled, insecticide
Diquat diquat dibromide, herbicide, aquatic
Paraquat CL paraquat dichloride, herbicide, contact
Difolatan 4 flowable (difolatan), fungicide, broad spectrum
Isotox, insecticide
Orthocide (captan products), fungicide, broad spectrum
Volik Supreme (oil), insecticide, miticide

Ciba-Geigy Corporation, Saw Mill River Road, Ardsley, N.Y. 10502
AAtrex® 80W, atrazine, herbicide, turf for sod production, noncrop land, pre- and postemergence
Atratol® 8P, atrazine, sodium chlorate, sodium metaborate, herbicide, nonselective, bareground, pre- and postemergence
Atratol® 80W, atrazine, herbicide, nonselective, bareground, pre- and postemergence
Diazinon®, diazinon, insecticide, lawns, ornamentals
Pramitol® 5PS, prometone, simazine, sodium chlorate, sodium metaborate, herbicide, bareground, noncrop land, pre- or postemergence
Pramitol® 25E, prometone, herbicide, bareground, noncrop land, pre- or postemergence
Princep® 4G, simazine, herbicide, nurseries, Christmas tree plantings, shelter belts; nonselective for noncrop land, preemergence
Princep® 80W, simazine, herbicide, grasses grown for seed (Pacific N.W.); nurseries, turf trass for sod; nonselective for noncrop land, preemergence
Sarolex®, Diazinon, nematicide, insecticide, turf
Sequestrene®, chelated micronutrients, ornamentals, turf

W. A. Cleary Corp., P.O. Box 10, 1049 Somerset St., Somerset, N.J. 08873
Cleary's 3336™, fungicide, systemic
Bromosan™, fungicide
PMAS 10%, fungicide and herbicide
Caddy, fungicide, protectant
Spotrete, fungicide
Cad-Trete, fungicide
MCPP + 2,4-D, herbicide, postemergent
Methar 30 and 80 (DMSA), herbicide, contact 30% and 80%
Super Methar, herbicide
Cleary's AMA + 2,4-D, herbicide, selective, postemergent
Tru-Green, trace element, liquid chelating agent
Greenzit, colorant (turf and tree)
Allwet, wetting agent, non-ionic
Clearspray, anti-transpirant

We are a real aid to your golfer and cart management problems!

Dear Superintendent:

The advent of golf carts has provided golf clubs with income, and replaced hard-to-find caddies.

However, carts have also created problems for you, the course superintendent. We know that carts, improperly used, cause compaction, ruts, and grassless paths.

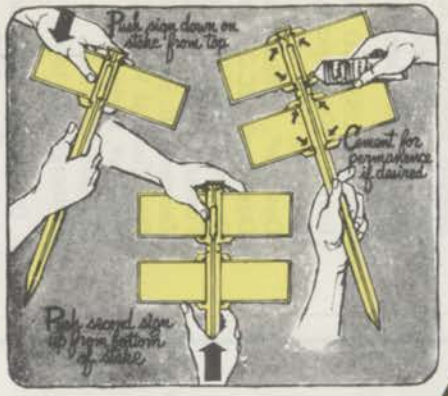
We also know that about half the operators of carts do not understand compaction, nor do they pay attention to where they drive their carts. Cart management is a problem at most golf courses. Recognizing cart problems, COURSIGNS was established and is manufacturing plastic signs and stakes that will help you in your cart management.

The signs are inexpensive, yet proven effective. They will not cause mower damage, and are designed to minimize labor in installations, by providing a "wedge-type" rope notch to facilitate stringing of ropes between stakes. A variety of inscriptions are available which not only cover direction of carts, but define "ground under repair" areas, remind golfers to replace divots, rake traps, etc. May we send you free samples for your evaluation?

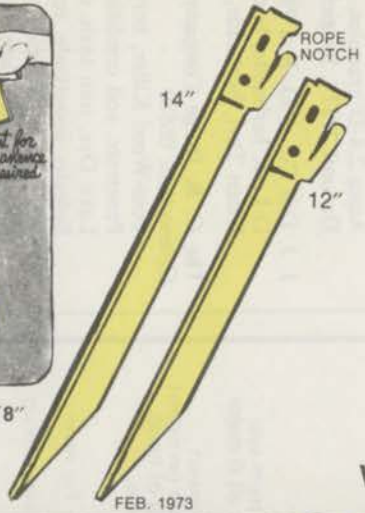
Yours truly,

COURSIGNS, INC.

6500 N. CLARK ST. • CHICAGO, ILLINOIS 60626
(312) 465-6330



All our signs measure 2-9/16" x 8-1/8"



PATENT PENDING FEB. 1973

Forget about the bother of having metal signs made, nailing them to stakes, plus the nightmare of them getting stuck in the course mowing machines.

Assembly of our signs is a simple self-locking device as the illustration shows. Also a tube of plastic cement for permanence, if so desired. Stakes may be used with one or two signs, or alone to rope off any given area.

Signs are black lettering on yellow, except HAZARD sign which is yellow lettering on red, for lateral hazard; also black on yellow for parallel hazard.

WRITE FOR FREE SAMPLES

PRICE LIST

12" stakes	$30.00 per hundred
14" stakes	$34.00 per hundred
Signs	$40.00 per hundred
(Choice of any mix of inscriptions)	
Rope	$25.00 per thousand ft.
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Minimum order	$ 50.00
Special Starter Kit Offer	$129.50

Includes:
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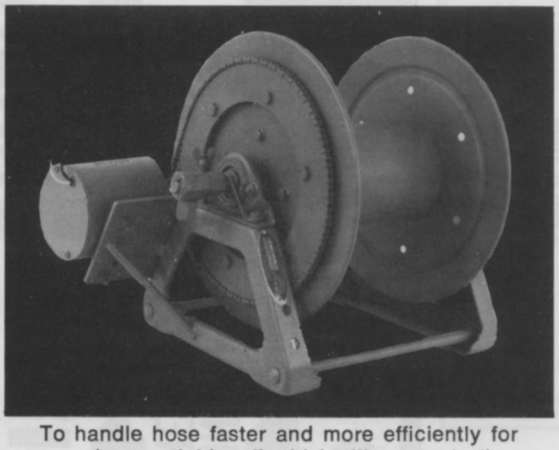
100 signs of your choice
2,000 ft. rope

Note: Terms 1% 10 days F.O.B.
6500 N. Clark St., Chicago, Ill. 60626
(Please specify routing)

For More Details Circle (160) on Reply Card

REELS to handle your spray hose



To handle hose faster and more efficiently for spraying pesticides, liquid fertilizers and other chemical products, specify Hannay reels. Available with air or electric powered rewind motors for fast, controlled rewinding of all hose lengths.

SEND FOR CATALOG NO. H-6612-ID

HANNAY REELS

CLIFFORD B. HANNAY & SON, INC., WESTERLO, NEW YORK 12193

For More Details Circle (117) on Reply Card

CLEARY PRODUCTS for BETTER TURF

3336 TURF FUNGICIDE – A broad spectrum systemic fungicide that prevents and controls all 6 major turf diseases. Non-toxic, non-mercurial.
BROMOSAN TURF FUNGICIDE – The newest broad spectrum systemic fungicide for those persistent problem areas or areas that have gotten out of hand.
CADDY – Economical Liquid Cadmium Fungicide.
PMAS (10%) – Crabgrass and Disease Control.
SPOTRETE – 75% Thiram Fungicide.
CLEARY'S GRANULAR TURF FUNGICIDE – For snow-mold, spring and summer diseases.
CAD-TRETE – Broad spectrum fungicide containing Thiram and Cadmium.
MCPP – Control of chickweed, knotweed, clover on bentgrass greens and fairways, bluegrass and fescues.
MCPP–2,4-D – Controls chickweed, knotweed, dock, dandelion, plantain, ragweed, pigweed, etc.
METHAR 80 – Controls Dallisgrass and crabgrass. Water soluble.
METHAR 30 – A super crabgrass killer.
AMA PLUS 2,4-D – Control of Dallisgrass, silver crabgrass, plaintain, dandelion, knotweed, chickweed, and other broad-leaf weeds.
AMA (SUPER METHAR) – The new "AMA" liquid crabgrass killer.
ALL-WET – Added to water, it allows quicker and deeper penetration...enables soil to retain needed moisture.
CLEAR-SPRAY – Liquid Hygrostatic Sticker to protect against wilt and winter kill.
TRU-GREEN – Liquid Chelating agent.
GRASS-GREENZIT – Permanent green pigment, restores green color to dormant or discolored grass. Not a dye.

W·A·CLEARY CORPORATION P. O. Box 10 Somerset, N. J. 08873

Colloidal Products Corporation, P.O. Box 621, Petaluma, Calif. 94952
Bio-Film®, spreader, sticker
Buffer-X®, spreader, activator, buffer
Compex®, compatibility agent for liquid fertilizers
Fomex®, foaming spray adjuvant and spreaderactivator for herbicide sprays
Multi-Film L, water dispersible spreader-activator
Multi-Film X-77, non-ionic spreader-activator
Nu-Trex, spreader-nutrient-buffer
Regulaid, spreader-activator for growth regulator sprays
Solvaid, spreader-stabilizer for oil sprays
Tronic, spreader-activator

Conwed Corporation, 2200 Highcrest Road, St. Paul, Minnesota 55113
Conwed Mulch, fiber mulch
Conwed Netting, erosion control netting
Conwed Protection Blanket, turf protection blanket
Hydro-Mulch Fiber, mulch fibers

Cowbell Seeds, 380 North US-23, Brighton, Michigan 48116
Merion, Fylking, Baron, Nugget Kentucky Bluegrass; Winter Green Chewings Fescue; Norlea perennial Ryegrass; seeds

Creative Sales, Inc., 200 South Main, Fremont, Nebraska 68025
Medicaps® tree systems, systemic trunk implants (trees)

D

Diamond Shamrock Chemical Company, Agricultural Chemicals Division, 1100 Superior Avenue, Cleveland, Ohio 44114
Dacamine® herbicide
Dacthal® herbicide
DSMA herbicide
Daconate® herbicide
2,4-D herbicide
2,4,5-T herbicide
Silvex® 2,4-D, herbicide
2,4-D granules, herbicide
Aqua 2,4-D granules, herbicide
Daconil 2787®, fungicide

J. J. Dill Co., P.O. Box 788, Kalamazoo, Mich. 49005
D-Lete, herbicide, bareground, liquid and granular
Kleen Turf, herbicide, selective, broad-leaved plants

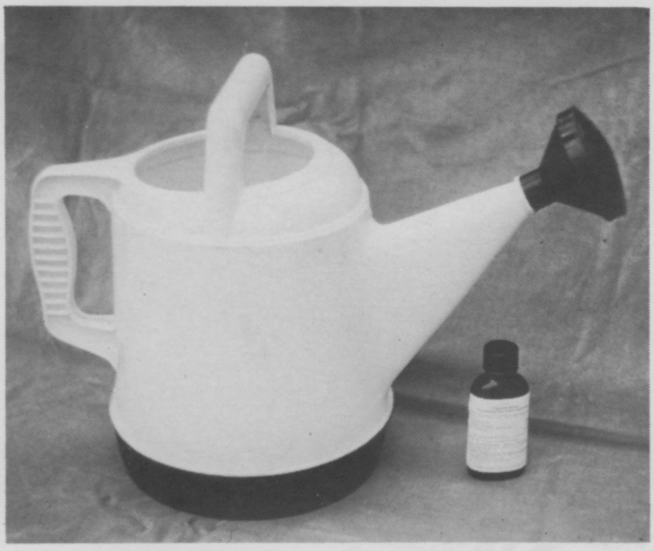
The C. B. Dolge Company, 11 Ferry Lane West, Westport, Connecticut 06880
Tote-Weed Killer, herbicide, bareground
Penetrate, soil conditioner
Lake Dye, non toxic dye for water
Solexto, insecticide, turf
EWT Plus, herbicide, selective MCPP plus 2,4-D
Boost, solvent detergent cleaner

Dow Chemical USA, P.O. Box 1706, Midland, Michigan 48640
Formula 40, herbicide
DMA-40, herbicide
Dowpon®, herbicide, non-selective
Dowfume® MC-2, fumigant
Dursban® 2E, insecticide
Fumazone® 86, fumigant
Zectran® 2E, insecticide
Dow General Weed Killer, herbicide
Esteron®, herbicide
Kuron®, herbicide
Premerge®, herbicide

E. I. Du Pont de Nemours & Co., Inc., 1007 Market St., Wilmington, Del. 19898
Hyvar® X bromacil weed killer, Hyvar® X-L, (liquid) bareground

(continued on page RR)

For More Details Circle (102) on Reply Card



A common sprinkling can is the only tool needed to apply Diagnostic Aid. The pyrethrin compound is packaged in two-ounce containers, for use at ½ to 1 capful per gallon of water.

The mixture is applied to one square yard of turf or lawn. Applications should be made on two or three similar areas per 5,000 square feet of turf. Sensitive insects emerge within 10 minutes after application.

DIAGNOSTIC AID FOR TURF

Clever New Irritant Aids In Pest Analysis

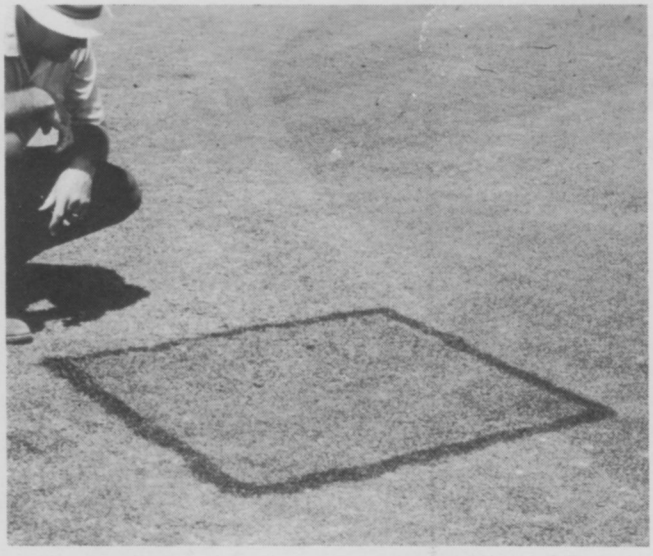
A NEW development in turf insect control makes it possible to tailor control measures toward the particular insect species present.

Diagnostic Aid, recently introduced by Tuco, Division of the Upjohn Company, received Environmental Protection Agency approval for use as an aid in detecting insects earlier this year. Not an insecticide, but an irritant, application of the chemical causes sensitive species of insects to emerge from the soil.

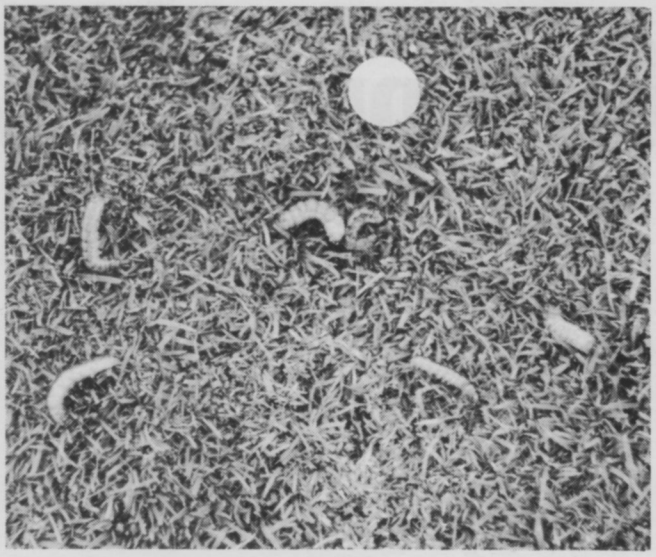
"This before and after treatment of Diagnostic Aid should greatly reduce the need for wholesale application of everything in the spraying arsenal just to make sure all possible pests are killed," says Dr. Price Parham, a Tuco researcher. "A new era of programmed turf is now practical."

The ultimate results of such a program should be more economical insect control, fewer total insecticides applied, and less potential risk to the environment.

For more details, circle (719) on the reply card.



Larvae of cutworms and sod webworms respond almost immediately to the treatment, Tuco researchers say, and earthworms can also be detected. After learning exactly what insect species are present, the turf manager can determine whether control measures are justified and, if so, what measures to use.



Tuco's Proxol 80SP trichlorfon insecticide is sold in conjunction with Diagnostic Aid for use if more than one cutworm or sod webworm larvae are detected per square yard of turf. After the use of Proxol, an application of Diagnostic Aid will enable the user to assess the results of the insecticide.

We'll put our weed control crew

up against yours any day!

Would your crew promise (and deliver!) effective control of many weeds for as little as ten cents per thousand square feet?

Would they promise not to damage or weaken any growing stock they are cleared to handle?

Would they keep on working around the clock, month after month?

If not, turn the weed control job over to our crew. You couldn't ask for better, more dependable help!

Elanco Products Company, a division of Eli Lilly and Company, Dept. E-455, Indianapolis, Indiana 46206, U.S.A.

Balan
Treflan
Dymid

ELANCO

(Balan®—benefin, Elanco)
(Treflan®—trifluralin, Elanco)
(Dymid®—diphenamid, Elanco)

Krovar® I, weed killer, bareground
Karmex® diuron weed killer, bareground, preemergence
Ammate® X weed and brush killer, contact
Tersan® LSR, turf fungicide
Tersan® 1991, turf fungicide
Tersan® SP, turf fungicide
Tersan® 75 Turf Fungicide, thiram fungicide
Benlate® benomyl fungicide, fungicide, Dutch Elm disease aid
Tupersan® siduron, herbicide, preemergent, for crabgrass

E

Elanco Products Company, P.O. Box 1750, Indianapolis, Indiana 46206
Balan® benefin, herbicide, preemergent
Treflan® trifluralin, herbicide, preemergent
Dymid® diphenamid, herbicide, preemergent, liquid and granular
Parnon®, fungicide
Pipron®, fungicide, liquid concentrate
Arest®, growth regulator

Elm-R, Inc., Muscatine, Iowa 52761
Freers Elm Arrester, environmental protection chemical

F

FMC Corporation, Agricultural Chemical Division, 100 Niagara St., Middleport, New York 14105
Tandex® Karbutilate, herbicide, postemergent, bareground
DNBP, insecticide
Lead arsenate, insecticide
Dalapon, herbicide
Dichlone, fungicide
Systox, insecticide
Tedion® tetradifon, miticide
Arsenical compounds, insecticide
DNOC, fungicide
Endosulfan, Thiodan®, insecticide
Guthion Azinphosmethyl, insecticide
Lindane, insecticide
Methyl Parathion, insecticide
Oils, insecticide, dormant and summer
Parathion, insecticide
Phorate Thimet, insecticide
Pyrethrins, insecticide
Pyrenone®, Synergized Pyrethrins, insecticide
Sevin carbaryl, insecticide
Sinox®, herbicide
Copper Sulfate, tri-basic, fungicide
Cyprex, fungicide
Ferbam, fungicide
Maneb, fungicide
Polyram®, fungicide
Sulfur, fungicide
Synthrin® resmethrin, insecticide
Tetralate® resmethrin + Neo Pynamin, insecticide
Thiram, fungicide
Zineb, fungicide
Ziram, fungicide

Faesy & Besthoff, Inc., 143 River Road, Edgewater, N. J. 07020
F & B Lawn & Turf Fungicide, granular, combo of Dyrene and maneb
F & B Aspon Chlordane, insecticide, broad spectrum granular and sprayable
F & B Eptam 2.3, herbicide, granular, preemergent
F & B Sevin carbaryl, insecticide, granular, flowable, dust and wettable powder for mulations

Ferguson Fumigants, Inc., 93 Ford Lane, Hazelwood, Missouri 63042
Zytox Gelled Soil Fumigant, gelled methylbromide

Ferry-Morse Seed Co., P.O. Box 100, 111 Ferry-Morse Way, Mountain View, California 94040
Turf and Lawn Seeds

Ferti-Feeder, Inc., 2419 Easton Blvd., Des Moines, Iowa 50317
Ferti-Feed, tree food (localized food formulations)
Ferti-Sulf, soil ph adjustment
Ferti-Iron, iron chlorosis treatment

Floridin Company, 3 Penn Center, Pittsburgh, Pa. 15235
Florex attapulgite, granular clay carrier
Diluex attapulgite, powdered clay carrier
Min-U- Gel 200 attapulgite, suspending clay for fluid fertilizer

Foamspray Chemicals Inc., 10414 Harry Hines Boulevard, Dallas, Texas 75220
Foamspray®, foaming adjuvant, nozzle loan program, spraying nozzles and handguns
OD 4 Liquid Humus, growth aid
Microtil Soil Conditioner, growth aid
Infilaid soil penetrant, soil penetrant
Captan flowable, fungicide protectant
Imidan Emulsifiable, insecticide
Heptachlor 10 Granular, insecticide
Malathion 57%, insecticide
Toxaphene 10 Granular, insecticide
Chlordane 72%, insecticide
Sevin liquid, insecticide
Zectran 2E, insecticide

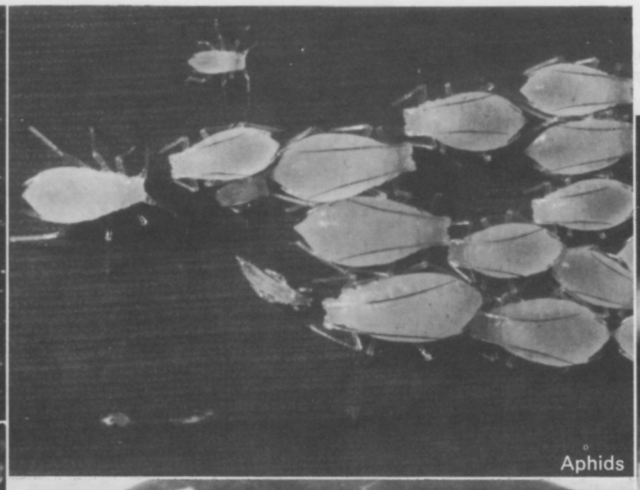
G

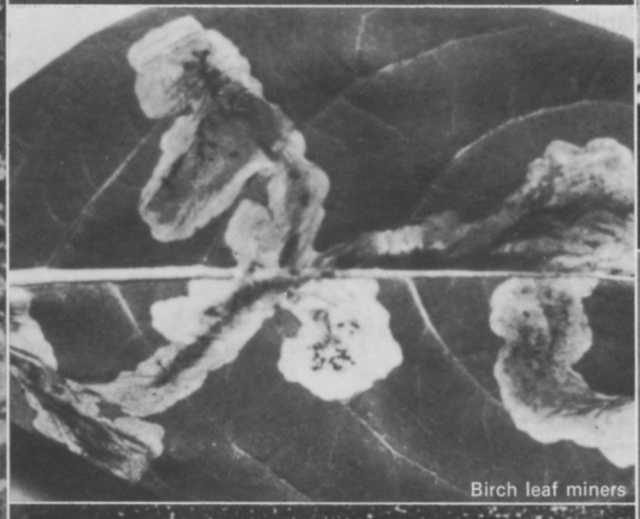
Gabriel Chemicals Ltd., 60 E. 42nd St., New York, N.Y. 10017
Gabriel Malathion, insecticide, liquid and WP
Gabriel Pyrethrum, insecticide, extracts and powders
Swingfog SN-10, insecticide fogger

PBI-Gordon Corporation, 300 South Third St., Kansas City, Kansas 66118
Trimec Fairway herbicide, herbicide, postemergence
Trimec Bentgrass herbicide, herbicide, postemergence
Trimec St. Augustine Herb., herbicide, postemergence
Trimec Dandelion and Chickweed herbicide, herbicide, postemergence

Grasslyn, Inc., 641 Pine Grove Rd., State College, Pa. 16801
Penngift crownvetch seed and crowns, seed

Great Lakes Biochemical Co., 6120 West Douglas Ave., Milwaukee, Wisconsin 53218
Algimycin PLL-C, controls growth of algae in ponds, lakes and lagoons
Algimycin PLL, controls growth of algae in small ponds and fountains
Algimycin GLB-X, controls growth of algae in decorative fountains and ornamental ponds
ERE, evaporation retardant for trees and turf and for use in transplanting.
Algae Shock, granular algicide, kills and prevents regrowth of algae in swimming pools.
Algimycin tabs, tabletted algicide, kills and prevents regrowth of algae in swimming pools
Algimycin "aba", liquid algicide, kills and prevents regrowth of algae in swimming pools
Filter-Cleanse, filter cleaner for use in and around swimming pools
Sequa-Sol, stain protection for use in and around swimming pools
TLC, tile, liner and chrome cleaner for use in and around swimming pools
Hypo-Clean, prevents clogged feeder lines for use in and around swimming pools





Ag-Organics Department, Midland, Michigan 48640

Bet you can't name another insecticide that kills as many bugs as Zectran. That's because there's nothing quite like ZECTRAN* insecticide. It's the powerful, general use product that may replace other insecticides you're now using. ZECTRAN insecticide works on almost all major foliage-feeding insects—including hard-to-kill kinds, foliage-feeding worms and caterpillars, even many major turf pests. And more. ZECTRAN insecticide is also effective against slugs and snails. Use ZECTRAN on over 600 different flowers, ground covers, trees, shrubs, house plants and turf. It's biodegradable, easy to apply—in either liquid or powder form. Just remember to read and follow all the directions for use and precautions for safe handling on the product label.

*Trademark of The Dow Chemical Company

DOW

DOW CHEMICAL U.S.A.

For More Details Circle (127) on Reply Card

Great Lakes Chemical Corporation, P.O. Box 2200, Hwy. 52 N.W., West Lafayette, Indiana 47906
- Brom-O-Sol, soil fungicide
- Brom-O-Gas, soil fumigant
- Soilbrom 40, nematocide
- Soilbrom 85, nematocide
- Soilbrom 90 E.C., nematocide
- Chlor-O-Pic, insecticide fumigant
- Terr-O-Cide 15, soil fumigant, multipurpose
- Terr-O-Cide 15-D, soil fumigant, multipurpose
- Terr-O-Cide 30, soil fumigant, multipurpose
- Terr-O-Cide 30-D, soil fumigant, multipurpose
- Terr-O-Gel 67, soil fumigant, controlled release

Greenlife Products Company, Inc., P.O. Box 72, West Point, Virginia 23181
- Pine bark soil conditioner, soil amendment
- Pine bark mulch, for weed retarding, moisture holding, weather protection and soil improvement
- Pine bark Deco nuggets, decorative bark
- Cow manure, fertilizer 2-1-2
- Top soil, soil improvement
- Peat humus, soil improvement
- Cyress Bark
- Shredded Hardwood Bark
- Western Decorative Bark

The Gregg Co., 1714 Bannard St., P.O. Box 149, Riverton, New Jersey 08077
- Nu-Type Green Lawn Spray, latex emulsion, grass colorant concentrate for dormant grass

Gulf Oil Chemicals Co., 9009 West 67th Street, Merriam, Kansas 66202
- Carbine® barban, herbicide
- Topcide®, herbicide
- Outfox®, herbicide
- Prefox™, herbicide

H

Hercules Incorporated, 910 Market St., Wilmington, Delaware 19899
- Nitroform®, fertilizer, slow-release ureaform
- Powder Blue™, fertilizer, sprayable slow-release ureaform
- Blue Chip®, fertilizer, slow-release ureaform for dry application
- Azak®, herbicide, preemergence for crabgrass

Hydro-Turf, P.O. Box 3, Elk Grove, Ill. 60007
- Fertilizer
- Erosion Control Chemicals

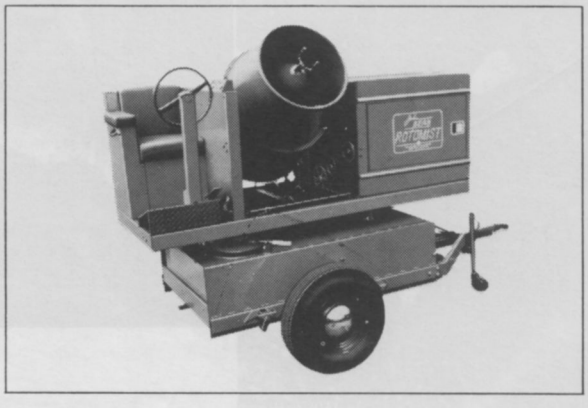
I

International Minerals & Chemical Corp., IMC Plaza, Libertyville, Illinois 60048
- Sul-Po-Mag, fertilizer (natural form of sulphate of potash, magnesium and sulphur)

International Spike, Inc., 462 East High Street, Lexington, Ky. 40508
- Jobe's Tree Food Spikes, 16-8-8 fertilizer

J

Jacklin Seed Co., Division Vaughan-Jacklin Corporation, E. 8803 Sprague Ave., Spokane, Washington 99213
- Fylking Kentucky Bluegrass,turfgrass seeds
- Merion Kentucky Bluegrass, turfgrass seeds
- 15 other Turfgrass Varieties, turfgrass seeds



Get the tops in shade tree spraying

John Bean ROTOMIST sprayers have the power to put protection where it's needed most—in the tops of the trees. Straight-through air delivery, unrestricted by elbows, angled air passages or deflectors, breaks up droplets for uniform deposit of chemicals and carries them throughout the tree for full coverage, economically and fast. ☐ ROTOMIST sprayers are available in four basic models for all kinds of spraying jobs from trees and shrubs to mosquito and fly control, weed and brush spraying, windrowing leaves, spraying livestock, zoos and other areas where pesticides are needed. Find out how to save from 50 to 75% on equipment and labor with multi-purpose ROTOMIST. Ask your John Bean dealer now.

fmc CORPORATION
AGRICULTURAL EQUIPMENT
JOHN BEAN
DIVISION
Jonesboro, Ark.—Ocoee, Fla.—San Jose, Calif.

JD301 delivers three major advantages topped with a choice of 20 options

Low vibration *is a built-in benefit of the 3-cylinder engine, and John Deere gives it to you in your choice of gasoline or diesel. Hush the exhaust, too, with a choice of front or rear mufflers.*

Long-life brakes *that never need adjustment are standard on the JD301—wet-disk type, mounted inboard away from dust and moisture.*

Low-stress design *means more durability, too, in John Deere final drives—inboard planetaries that run in the filtered oil of the transmission case.*

For other specifics on ROPS, tire choices, and equipment, see your John Deere dealer, listed in the Yellow Pages. He has the latest on leasing and financing, too. John Deere, Moline, Illinois.

Warm weather? With John Deere, the fuel tank and battery are both mounted well away from engine heat. Cooling system is pressurized with pump, thermostat, and fixed bypass. Air cleaner is dual-stage dry type, sized right for engine capacity.

JOHN DEERE

Power Equipment for Public Works

For More Details Circle (108) on Reply Card

K

KDM Co., P.O. Box 6814, San Antonio, Texas 78209
Spra-Mate emulsifier, application adjuvant for invert emulsions

L

Lawn Medic Inc., 1024 Sibley Tower Bldg., Rochester, N.Y. 14604
Total Organic, fertilizer, 38% urea-formaldehyde
Soil Nutrient, fertilizer
2,4-D + Silvex, herbicide, liquid
Colorant
Pre-Germ Grass, seed, artificial seed germinating process

Lethelin Products Co., Inc., 15 MacQuesten Parkway So., Mount Vernon, New York 10550
Borerkil (lindane), insecticide, kills borers in trees, shrubs and flowers

Lofts Pedigreed Seed, Inc., P.O. Box 146, Bound Brook, N.J. 08805
Baron Kentucky Bluegrass, seed
Merion Kentucky Bluegrass, seed
Jamestown Red Fescue, seed, a chewings type
Exeter Colonial Bentgrass, seed
Kingstown Velvet Bentgrass, seed

Loveland Ind., Inc., 105 W. 2nd., P.O. Box 483, Loveland, Colo. 80537
Mo-Bait, filmer, adjuvant, attractant
Flozine, suspending agent for wettable powders and flowables

Lowden, 16 Franklin Street, Needham Heights, Maine 02194
Antibiotic Injectors for trees, used in control of Dutch Elm Disease

M

Mallinckrodt Chemical Works, 2nd. & Mallinckrodt Streets, St. Louis, Missouri 63160
Auragreen®, auramine, turf spray indicator dye
Cadminate®, turf fungicide
Fungo™, systemic turf fungicide, broad-spectrum
Calo-Clor®, mercuial fungicide
Calo-Gran®, granular mercurial fungicide
Koban®, turf fungicide
Kromad®, fungicide, broad-spectrum
Spring-Bak®, fungicide
Thiramad®, fungicide, broad-spectrum
Tobaz®, systemic fungicide
Po-San®, herbicide, post emerg., Poa annua control for fairways
Pre-San®, herbicide, preemerg., Poa annua control and crabgrass
Trex-San™, herbicide, broad-spectrum
Vitalon®,Dark, turf colorant
Spray-Hawk®, mobile turf sprayer
Emblem™, brand, herbicide pre-emergent

Manhattan Ryegrass Growers Assoc., P.O. Box 145, Hubbard, Oregon 97032
Manhattan Perennial Ryegrass, seed; medium textured turf with good shoot density and uniformity but having tough, fibrous vascular bundles in the leaves.

Johns-Manville Corp., Box 290, 22 E. 40th St., New York, N.Y. 10016
Diatomite, soil conditioner

Masonite Corporation, 29 N. Wacker Drive, Chicago, Illinois 60606
Fibrex Root Insulator/Weeder, ¼ to ¾ pine bark impregnated with a bio-degradable, selective, pre-emergent herbicide.

Types Of Chemical Vegetation Control

Abatement Vegetation Control: This is the use of a chemical (or combination of chemicals) at rates which result in a knockdown of existing vegetation and retardation of regrowth. One to three applications may be necessary depending on the length of the growing season and the chemical combination used. It is designed for areas where bareground is not necessary.

Bareground (Complete Control): The application of residual-type herbicides at high rates to give complete control of all vegetation. This is desired in areas where weed and grass growth creates risks of fire hazards, decreased maintenance efficiency, or where maintaining bareground economically is desired. Initially high rates are required but retreatments at one-half to one-third of the initial rate usually maintains the bareground.

Chemical Trimming & Pruning: This is the use of a contact herbicide to knockdown vegetation in close proximity to valuable plants. Weeds and grasses under fences, along drainage ditches, and under highway guard rails, may be controlled by treating the foliage of the undesired plants. Portions of limbs of trees that overhang on a right-of-way may also be controlled by directing the spray to those limbs. This is accomplished without material damage to the tree.

Selective Weeding: The control of certain plants with a chemical or combination of chemicals without permanent injury to desired vegetation. These chemicals may be applied either as pre- or postemergence treatments.

Brush Control: For summer foliage treatment, the application of chemicals to leaves and stems of brush during the active growing season. Complete wetting of the plant to the point of runoff is necessary for effective control. For basal stem applications, it is necessary to apply residual-type herbicides to the soil at the base of individual stems or clumps of brush in late winter to early summer. For stumps, the application of phenoxy herbicides or ammonium sulfamate to freshly cut stumps (within 24 hours) to prevent resprouting. For dormant cane treatment, the application of phenoxy herbicides in diesel fuel in the winter. Eight to 16 pounds active ingredient in 100-200 gallons of diesel fuel per acre is usually used.

Courtesy of E. I. Du Pont de Nemours & Co., Inc.

J. J. Mauget Co., P.O. Box 3422, Burbank, Calif. 91504
Mauget, tree injection process
Inject-A-Min, nutrients
Inject-A-Cide, insecticides
Mauget Capsules, fungicide, benomyl

Meinhardt Products Div., 2401 Gardner Rd., Broadview, Illinois 60153
Weed Out, herbicide, selective

Melthor Industries, Inc., 1212 W. 5th Street, Kansas City, Missouri 64101

(continued on page YY)

Teddy Temper

We can't do anything about Teddy Temper. But if you've got Dollar Spot, Large Brown Patch, Fusarium Blight or Striped Smut, we can help you there.

With Chipco Spot Kleen. A new non-mercurial systemic fungicide that's now cleared for control of these turf diseases.

And Chipco Spot Kleen has a wide margin of safety on your turf.

Try Chipco Spot Kleen this season. It will help you keep your greens (and fairways) in the pink.

Chipco® Spot Kleen.

From Rhodia Chipco Products.

Rhodia
CHIPMAN DIVISION

"He's not just another duffer. He's chairman of the greens committee."

For More Details Circle (109) on Reply Card

the leader's bag
Producing super golf turf is our bag. It's the business we know best—from tee to green.
As a matter of record, 90% of our professional business is golf. That's the kind of record you expect from the nation's leading fertilizer company.
You also expect custom programs that will overcome your turf problems while keeping you one up on your budget. And we meet that challenge, too. We've proven it a thousand times over. All over.
For the help you need to build and maintain tournament quality turf, look to the leader. Agrico, of course.
That's our bag.
Agrico®
Country Club
FERTILIZER
Agrico
Box 3493, Tulsa, Oklahoma 74101

Penncross Creeping Bentgrass, seed; fine textured, dense, uniform, high quality turf capable of being mowed closely.

Merck Chemical Division, 126 E. Lincoln Avenue, Rahway, New Jersey 07065
Mertect® 140-F, thiabendazole, fungicide, flowable
Mertect® 340-F, thiabendazole, fungicide, flowable
Mertect® 160, fungicide, wettable powder
Mertect® 360, fungicide, wettable powder
Hormodin®, indole-3-butyric acid, root inducing substance
Gibrel® gibberellic acid, plant growth substance
Agri-Strep, streptomycin formulation, control of certain plant diseases

Merion Bluegrass Association, 101 Park Ave., New York, N.Y. 10017
Merion Kentucky Bluegrass

Miller Chemical & Fertilizer Corporation, P.O. Box 333, Hanover, Penna. 17331
Nu-Film-17, sticker-extender
Nu-Film-P, sticker-spreader
Miller Aide, herbicide activator
Vapor Gard, anti-transpirant

3M Company, New Business Ventures Division, 3M Center, St. Paul, Minn. 55101
System M (Mariner Brand), algaecide, WP, controls chara and filamentous algae
System E (Mariner Brand), herbicide, endothall, pelleted, aquatic, (Fla. only)
System A (Mariner Brand), algaecide,(aqueous solution of copper-triethanelamine complex) controls plankton and filamentous algae
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Botran 75W, DCNA, fungicide, fruit trees, ornamentals
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Vi-Par 2,4-D + MCPP,herbicide, contact and selective
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Silva Fiber, mulch for hydro-seeding
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Winru Chemical & Sales Co., 923 State Line, Kansas City, Missouri 64101
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Synergized Pyrethrins, insecticides
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Malathion, insecticide
Diazinon, insecticide
Zectran, insecticide
Infuco Compression Sprayers, environmental protection chemical sprayer
Phostoxin, fumigant

Z

Zonolite, W. R. Grace & Co., P.O. Box 517, Travelers Rest, S.C. 29690
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Nutsedge Control Shown In Soil Fumigation Study

Soil fumigation has been an accepted practice for about 20 years among nurserymen who desire healthy ornamental plants that are free of soil-borne diseases and insects.

Now horticultural research workers associated with the University of Maryland at College Park have shown that soil fumigation each fall at sufficient rates and proper soil temperatures also can control yellow nutsedge—a pesky perennial weed—in the following growing season.

Research findings to support this conclusion were formally presented in a technical paper by Dr. C. Edward Beste, extension horticultural weed specialist for the University of Maryland.

His published report represents the finale of a three-year study begun by the late C. Dwain Altman, also an extension horticultural weed specialist, at the University of Maryland's vegetable research farm west of Salisbury.

The Beste-Altman study involved three commercial fumigants, bearing the trade names Vorlex, Telone C and DD-PIC. It showed that commercially acceptable yellow nutsedge control was obtained with Vorlex at 30 gallons per acre, and with Telone C or DD-PIC at 40 gallons per acre applied in the fall.

Effectiveness of nutsedge control with all three fumigants was reduced measurably as soil temperatures at the six-inch depth fell from 50 degrees F. to 40 degrees F. at the time of fumigation.

Effectiveness of Vorlex in controlling nutsedge, for instance, dropped off from 80 percent to only 20 percent with a 10-degrees drop in soil temperature at six inches.

The other two commercial fumigants each showed an effectiveness drop from 80 percent to 60 percent for nutsedge control under identical temperature conditions in the Maryland study.

Since cultural practices for the light soils on Maryland's lower Eastern Shore, along with normal seasonal workloads, dictate that soil fumigation be done in the fall, Dr. Beste concluded that the fumigants should be applied in October. This timing would normally allow at least two weeks with soil temperatures of 50 degrees F. or more at the six-inch depth.

FoamSpray Chemicals, Inc. Buys Ag-Chem Div. Of LTV

Acquisition of the agri-chemical products division of The LTV Corporation by FoamSpray Chemicals, Inc., has been announced jointly by both companies.

Neither company revealed financial details of the transaction. However, C. B. "Bob" Franklin, president of FoamSpray Chemicals, said the company was formed specifically to accommodate the acquisition.

Investors in the company include certain of the former Agri-Chemical employees who now are with FoamSpray Chemicals.

The company produces and markets a patented chemical additive known as FoamSpray which is used with herbicides and insecticides to form a spray mixture for use in all forms of agriculture. Additional products marketed under the FoamSpray trademark include the growth aides OD4 and Microtil and a complete line for Home & Garden.

FoamSpray first was developed by R. L. Wilson Co., Inc., a Houston-based subsidiary of Service Technology Corporation and marketed under the trade name of Wilsco FoamSpray on a nationwide basis.

John F. Cornman has been elected professor of turfgrass management emeritus upon retirement in June from the N.Y. State College of Agriculture and Life Sciences, Cornell University. A specialist in turfgrass management, Cornman has been a faculty member of the college's department of floriculture and ornamental horticulture for 33 years.

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Rigid Field Burning Standards Set For Idaho Seed Producers

Smoke billowing across some of Idaho's fields have, because of a pollution problem, caught the eye of environmental protection officials.

And, unless the problem is solved, a growing and relatively new Idaho agricultural industry is likely to suffer. University of Idaho researchers in the College of Agriculture are seeking answers to the problem.

The industry is bluegrass and other lawn-type grasses grown for seed. Practically all the Idaho production is in the state's northern panhandle. Latah County production, although relatively small, contributes to the value of the industry, estimated at about $12 million annually in Idaho.

The reason environmental protection officials are concerned is that growers burn off fields following a seed crop harvest and the burning frequently creates air pollution.

Grass seed producers have been cooperating with Idaho air pollution officials to hold down the pollution caused by burning grass fields. Burning of grass fields is timed by the U.S. Weather Bureau to coincide with the most favorable conditions in order to minimize the problem in local communities.

However, since there sometimes is a problem, Idaho pollution control officials, in cooperation with grass growers, have developed schedules concerning grass seed field burning. The schedules comply with the 1970 Amendments to the National Clean Air Act.

The schedules are:

—by May 1974, a study shall be conducted to show feasibility of straw removal prior to burning, on lowering smoke emissions.

—by 1975, open field burning will be prohibited after first year production, if alternatives are available.

—burning field grasses shall be prohibited after the 1974 harvest. This does not apply to turf grasses.

—grass fields scheduled for tear out will not be burned after 1975.

—by December 1976, a study will be conducted to determine alternative means of disease and production control to eliminate burning of turf grasses.

—alternate methods to field burning shall be used as soon as they are available.

Dr. Ronald Ensign, UI plant scientist, is heading up research to find ways to meet grass seed production environmental requirements. UI colleagues working with him are Drs. A. A. Boe and Clayton Oslund, plant physiologists, and Dr. Richard Naskali, biologist.

Ensign said burning has for years been an economical means of removing plant residues following grass seed harvest. Under good conditions, a 100-acre field can be "cleaned" in an hour or two.

Also, research has shown burning the post-harvest residue stimulates seed production the following year. In fact, many turf grass varieties will not produce much seed if fields are not burned, Ensign said.

Burning is a good control measure for some weeds. It also enables plants to make better use of fertilizers; part of the nutrients need not be used to break down old plant material. University research has proven that burning destroys insects and some disease organisms.

These are among reasons producers credit the burning practice with helping maintain good seed yields and keeping stands strong for seven to eight years.

Ensign said College of Agriculture research objectives are to:

—evaluate effects of various burn and management treatments on growth and development of bluegrass plants.

—study methods of residue disposal other than burning and assess their effects on air pollution.

—examine turf grass varieties to determine their ability to produce without extensive burning.

—cooperate with seed producers and pollution control agencies to help control pollution under economic seed production practices.

Ensign said a series of field plots has been established representing bluegrass areas in northern Idaho. About 10 or 15 turf varieties common to the Northwest are to be studied for growth habits under various conditions and cultural practices.

Build-up of certain disease and insect populations and their effects on seed production will also be studied.

It may be that new varieties might have to be developed to meet environmental standards and at the same time enable the grass seed industry to survive and grow, Ensign stated.

Idaho production figures for Merion Kentucky bluegrass seed over a span of years illustrates growth of the industry. Acres planted in successive years from 1954 through 1970 were 600, 700, 950, 1,100, 1,000, 1,300,

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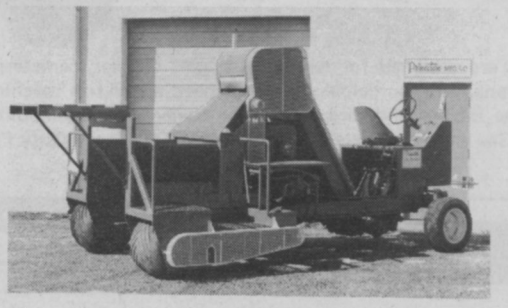
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1,600, 1,900, 2,100, 2,000, 2,200, 3,000, 4,00, 6,300, 5,700, 5,700 and 5,500.

In addition, the state boasts 25,000 acres of other proprietary and common grasses.

chitectural committee decided that Fylking was the variety most likely to please an estimated five million visitors.

Average cleaned seed yields ranged from a low of 145 pounds per acre in 1955 to a high of 345 in 1962 and 1967. The average from 1954 through 1970 was 260 pounds per acre.

Economic impact of the bluegrass seed industry in Idaho is illustrated by annual sales of only Merion Kentucky bluegrass seed harvested in Idaho from 1954 through 1970.

Those figures are: $158,000, $194,-000, $358,000, $194,000, $269,000, $492,000, $401,000, $360,000, $380,-000, $468,000, $704,000, $733,000, $561,000, $870,000, $740,000, $1,017,-000, and $1,544,000.

Idaho Crop and Livestock Reporting Service figures show Idaho, Oregon and Washington produced about 90 per cent of the 47 million pounds of bluegrass seed grown in the United States in 1972.

Idaho, with 6,076 acres under certification, was the largest Merion producer in 1972. Enough seed was grown in the state to plant over 200,000 average size lawns.

Ensign pointed out the figures quoted are only for Merion, only one of the many varieties and strains of cool season, lawn type grasses grown in the Gem state. Climatic conditions in the north Idaho area are ideal for growth of these grasses.

Expo '74 Committee Selects Fylking 0217 Official Grass

0217 brand Fylking Kentucky bluegrass has been selected as the official grass to be planted throughout the 100-acre site of Expo '74, the only World's Fair on the environment, it was announced today.

The first choice of Expo '74 landscape architects, Fylking Kentucky bluegrass will be used to highlight and enhance acres of trees, shrubs and flower gardens in a beautiful natural setting on the banks of the Spokane River in Spokane, Washington.

In carrying out the theme for Expo '74, "Celebrating Tomorrow's Fresh New Environment," the architectural committee was the variety most likely to please an estimated five million visitors.

During more than a decade of intensive testing in the United States, Canada and abroad, Fylking Kentucky bluegrass has proven its ability to thrive under adverse conditions and heavy traffic, yet maintain unexcelled color and appearance.

Fylking produces a finer, denser turf than most grasses according to Doyle Jacklin. It is one of the most energetic oxygen producers available. It requires little care and resists drought, disease and weed infiltrations. Fylking also receives high marks from environmentalists because of its ability to flourish with the application of little or no weed or disease control chemicals, he said.

Expo '74 visitors will be able to see lawns of Fylking Kentucky bluegrass, as well as foreign and domestic pavilions and exhibits on the environment, from May through October, 1974.

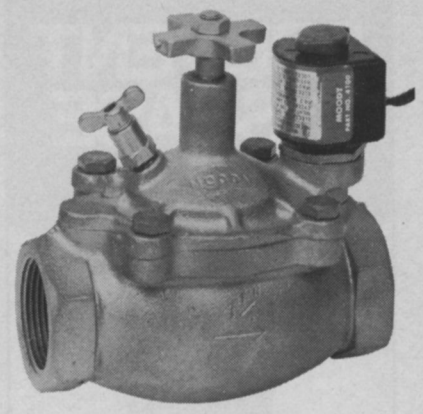
Drawdown Technique Holds Promise In Lake Weed Control

As the demand for water-oriented recreation continues to grow, lake weeds are proving to be an ever-increasing problem in our lakes. The Inland Lake Demonstration Project, a joint venture between the University of Wisconsin-Extension and the Wisconsin Department of Natural Resources, studied the use of overwinter drawdown (partial draining) to control lake weeds in two flowages in northwestern Wisconsin.

Dr. S. A. Nichols, Aquatic Biologist with the Project, reported a single drawdown during the winter of 1971-72 was very effective at controlling Robins pondweed, and to a lesser extent water lillies in the Mondeaux Flowage. The single drawdown eliminated approximately 50% of the problem vegetation with no direct costs involved.

The Chippewa Flowage was used to study the long-term effects of drawdown. The Flowage has been drawn down annually for 50 years. This study identified groups of plants which could and could not be controlled by drawdown.

Natural lakes, unlike impoundments, are not so readily manageable. However, Nichols indicates that even some natural lakes can be drained, using high capacity pumps, to achieve weed control. But he cautions that the resulting costs would be much higher and the environmental impacts must be carefully assessed.



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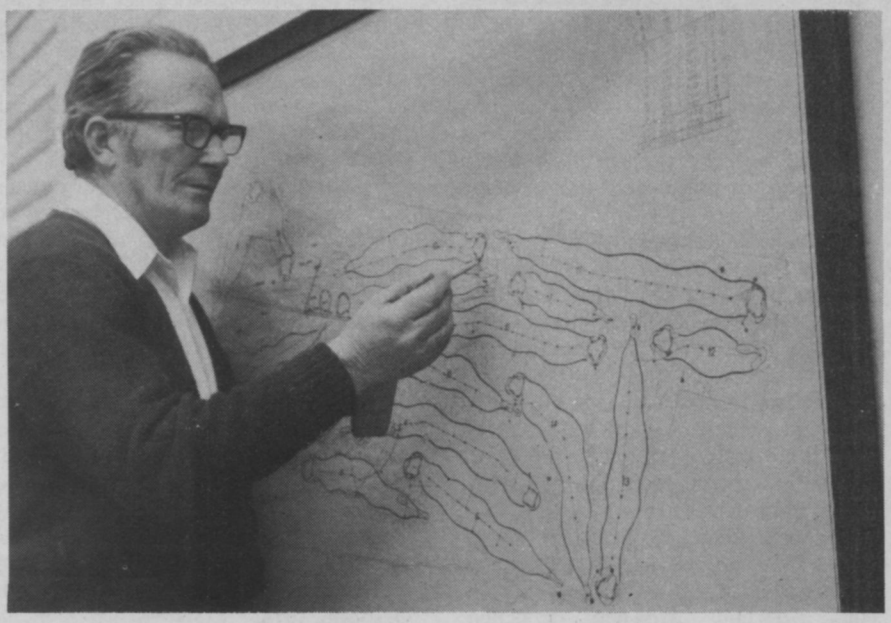


Irrigation is an integral part of the operation at Pines Country Club. Dennison reviews the pipe layout on the master plan. Ample source and supply of water has been essential in establishing turf on this four year old course.

TURF MANAGEMENT

(from page 15)

cluding the hiring of women as members of his maintenance crew.

Work assignments are made on the basis of know-how, skill, and course needs. One man handles major mechanical maintenance, though all the men are expected to keep their tractors and mowers lubricated. One man has been trained in boom spraying, so he can apply fertilizer and turf protectants. One man mows fairways; another mows the roughs; and others handle maintenance in sand traps and bunkers, trees, and the watering.

The Pines Club has a semi-automatic sprinkler system and its use is conditioned in part by the weather, with water being started just before the wilt stage on the fairways. Greens and tees have pop-up sprinklers; heads must be attached for fairway sprinkling.

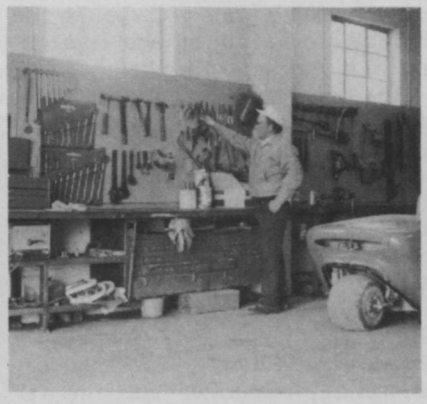
To keep things running smoothly, Denny spends part of every day walking the course and anticipating needed maintenance. A clipboard and a pencil prove useful for notes, as he makes his rounds. He schedules two of his crew for the night shift to handle fairway watering; but greens and tees are watered in the morning to help keep disease pressure down on these critical areas.

Looking ahead, Denny recognizes unfilled needs. He is starting a turf nursery to insure availability of turf in a crisis and to serve as a test area for new turf programs. For he recalls an incident at another course when over zealous representatives misapplied a fertilizer and burned up most of a green.

He is also working to increase his knowledge of turf and course maintenance. He attends four or five short courses each year to learn more about equipment or turf disease. He meets with technical representatives of chemical firms. And for years he has been active in the Allegheny Mountain Superintendents Association and the Golf Course Superintendents Association of America. This year, in fact, he is serving as president of the Allegheny Mountain Association, that meets 10 times a year to review mutual problems and needs that relate to better turf and better golf.

Pines Country Club in Morgantown is one of many new courses to open in the past decade. With an investment of more than $500,000 already and with an interest in improving club facilities in the future, the club needs the best kind of superintendent it can find. Denny has developed the experience and know-how useful in keeping turf disease under control. Managing turf programs has also yielded other dividends. And a man like Denny Dennison has the ability to put it all together. □

Dennison's son John adjusts a nozzle on this turf sprayer. He is a maintenance foreman at the club.



This is the maintenance shop. It adjoins Dennison's office and the supply storage area — all in one building.

—meeting dates—

International Shade Tree Conference, 49th annual meeting, Sheraton-Boston Hotel, Boston, Mass., Aug. 13-16.

International Pesticide Applicators Association, annual meeting, Marriott Inn, Berkeley Marina, Berkeley, Calif., Aug. 15-18.

North Dakota State Horticultural Society, annual meeting, Canada Department of Agriculture Research Station, Morden, Manitoba, Aug. 21-22.

Turf and Landscape Day, Ohio Agricultural Research and Development Center (OARDC), Wooster, Ohio, Sept. 11.

Kansas Arborist Association Field Day, 15th, Phillipsburg, Kans., Sept. 11.

Midwest Agricultural Chemicals Association, annual meeting, Lodge of the Four Seasons, Lake Ozark, Mo., Sept. 12-14.

Michigan Turfgrass Field Day, Crop Science Field Lab, Michigan State University, E. Lansing, Mich., Sept. 13.

Virginia Tech Turf Field Days, Sept. 19-20. (Contact Dick Schmidt or John Shoulders, VPI for more details.

Lawn & Garden Distributors Association, annual meeting, Sheraton-O'Hare, Chicago, Sept. 19-21.

Professional Grounds Management Society, annual meeting, Oglebay Park, Wheeling, West Virginia, Sept. 23-26.

Course for Licensing of Tree Pruners, Agricultural Extension Centre, Brandon, Manitoba, Canada, Oct. 1-5.

American Horticultural Congress, meeting of the American Horticultural Society, New Orleans, Oct. 1-7.

Society of Municipal Arborists, 9th annual meeting, Sheraton Inn, Flint, Mich., Oct. 3-5.

Tropical Plant Industries Trade Show, sponsored by the Florida Nurserymen and Growers Association, Diplomat Hotel, Hallandale Beach, Fla., Oct. 5-7.

Southwest Turfgrass Conference, Albuquerque, N.M., Oct. 11-12.

Industrial Weed Control Conference, 8th annual, Texas A&M University, College Station, Tex., Oct. 15-17.

Central Plains Turfgrass Conference, Manhattan, Kans., Oct. 17-19.

Turfgrass Equipment & Materials Educational Exposition, 13th annual, sponsored by Southern California Turfgrass Council, Orange County Fairgrounds, Costa Mesa, Calif., Oct. 17-18.

Wisconsin Golf Turf Symposium, eighth annual, Pfister Hotel, Milwaukee, Oct. 24-25.

Southeastern Agricultural Chemicals Association, 19th annual meeting, Callaway Gardens, Pine Mountain, Ga., Oct. 28-30.

Michigan Pesticide Association, fall conference, The Olds Plaza, Lansing, Mich., Nov. 7-8.

Washington State Weed Conference, Cosmopolitan Chinook Motel and Tower, Yakima, Wash., Nov. 7-9.

Penn-Del Chapter, International Shade Tree Conference, general meeting, Marriott Motor Hotel, Philadelphia, Pa. Nov. 8.

New Jersey Federation of Shade Tree Commissions, annual meeting, Haddon Hall Hotel, Atlantic City, N.J., Nov. 17-19.

EDITORIAL *(from page 5)*

talents and effective leaders within their communities and sales territories. Yet, when problems arose, these men found solutions only after long hours of difficult diagnosis.

The active ingredient is opportunity. Every problem can become an opportunity if analyzed as such. The Green Industry has in its grasp the ability to revolutionize environmental thinking, before government legislation makes undesirable situations mandatory. Where else can we find equipment and chemicals sales growth rate as high, new construction as rapid, environmental concern as serious and the willingness to accomplish as keen?

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National Golf Foundation To Survey Golf Market

"Operation — GOLF UPDATE" a survey about golf and golfers in the U.S., will be the most comprehensive effort ever made to compile all available significant information. According to Don A Rossi, executive director of the National Golf Foundation, the upcoming survey will be sent to more than 11,000 golf courses in mid-August.

Rossi explained that golf records maintained by the Foundation, and dating back to its origin in 1936, are no longer valid since many golf courses have changed in the interim — in ownership, in size, in type of operation and in the facilities offered. He said many new trends in golf course planning, construction and operation have emerged in recent years which cannot be statistically measured by the foundation's present records.

"To function effectively in meeting the growing demand for help in the development of every type of golf facility we must bring our unique storehouse of golf information up to date," Rossi said.

The "GOLF UPDATE" questionnaire has been especially designed for quick and easy fill-out, and features humorous cartoons to make it fun to complete. It is arranged for computer analysis, for quick 'read-out' of information.

"This is one survey that will reward the respondents directly because it will produce a useful yardstick for every private, daily fee and municipal golf operation," he noted. "However, for this yardstick to be truly useful, we need much more than a 'token' response.

"We receive inquiries daily on how many golf courses have installed automatic or semi-automatic irrigation, where they are located, are they successful, what are the problems, etc.

"Other questions involve the use and operation of golf car fleets at the different types of golf courses, mechanized golf course maintenance — even golf course lighting for night play or night maintenance," said the executive director.

"One very important area of information requested is whether the golf operation employs a golf professional, a course superintendent or a manager — any one of these, or all, or a combination of any two of these. The answer to these questions could indicate a need for additional trained specialists for these departments."

Rossi added that the final 'read-out' of the survey will not only furnish much additional important information for the foundation in helping existing golf operations with problems as well as assisting in the development of new golf courses. It will also indicate future directions for Foundation literature and consultant services.

The National Golf Foundation, a non-profit organization dedicated to the development of more golfing opportunity for Americans through its facility and activity development programs, is headquartered in Chicago's Merchandise Mart.

Energy And Clean Air Is Possible Says EPA's Fri

Robert W. Fri, Acting Administrator of the Environmental Protection Agency, has said it is possible for the nation to have "clean air and adequate energy—both by narrow but reliable margins—in this decade."

Speaking at a dinner meeting of the 27th conference of the Aerospace Industries Association of America, Inc. in Williamsburg, Virginia, the EPA official declared that the nation must use its coal reserves to meet energy needs and at the same time attain the primary, or health-related air standards.

"We have written to the Governors of the key coal-using states urging them to modify state plans as necessary to insure that national air quality health needs are met first," he said. "If these states modify their plans, the available clean coal and limited supplies of coal stack-gas cleaning technology can be used in the most polluted areas and the primary standards can be met."

Fri said that if Americans undertake a coordinated program, they also can reduce energy use by up to 20 percent without impairing their standard of living. Measures such as improved home insulation, more efficient air conditioning, streamlined industrial processes, and improvements in transportation all would help.

"By cutting down on energy demand and with some adroit juggling of clean fuel supplies, we should be able to get through the mid-1970's crunch," he declared. "For the mid-term—1980 into the 21st century—we must develop our present energy technologies to the optimum."

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industry people on the move

ROBERT COLEMAN joins Bozell & Jacobs, Inc. as group supervisor in the agricultural division.

* * *

A. D. DEGIDIO named vice-president-general manager for Toro Pacific. He will be in charge of three company owned distribution facilities in California.

* * *

RICHARD M. HUFF becomes assistant manager of marketing; **DR. E. GENE MAITLEN** becomes director of development; **FRANCIS R. RACINE** becomes national sales manager; **JOE B. ASHCRAFT** becomes manager, southern department; **RICHARD A. BROOM** becomes manager of legislative compliance; and **STEPHEN C. GOTH** becomes manager of planning and analysis for the agricultural chemical division of FMC Corporation. In other company moves **CHARLES E. KANEEN** becomes controller and **DOUGLAS D. NELSON** becomes manager international.

* * *

D. A. SCHWARTZ to marketing manager of specialty chemical group for Nalco Chemical Company.

* * *

RANDY RUSSELL appointed ProTurf representative in Georgia for O. M. Scott & Sons. He's a former golf coach. **JIM BOGART** will be working for ProTurf in western Michigan. Representing the company in western New York is **TOM WENTZ** and **FRAN BERDINE,** recent graduate in turf management from Cornell University, will handle sales in northern New Jersey.

* * *

JACK J. CANTU becomes vice president and director of O. M. Scott & Sons. His 27 year career covers almost every aspect of marketing.

* * *

JOE RHONE, JR. named regional sales manager for the southwest territory of the Weather-matic division of Telsco Industries. He will be responsible for sales in Texas, Okla., Ark., La. and western Tennessee.

* * *

BRUCE WATSON, JR. appointed district manager for the Los Angeles region of Rain Bird Sprinkler Mfg. Corp. **JAMES BELL** named golf market manager to handle all planning in the golf field for both the domestic and international markets. **LARRY ETHRIDGE** becomes golf irrigation specialist.

* * *

JAMES S. BRINCKERHOFF to general manager, chemicals division, United States Gypsum Company.

* * *

DR. ROBERT E. TREECE named associate chairman of the department of entomology at the Ohio Agricultural Research and Development Center, Wooster.

* * *

WILLIAM M. FLUEGEL becomes manager, national accounts for agrichemicals, Elanco Products Company. **JAMES T. WHITEHEAD** has replaced Fluegel as regional sales manager, agrichemicals, for the Fresno region. In other company moves, **BEN D. AGNOR** has been promoted to director of sales for agrichemicals. He succeeds **ROBERT E. HOWERTON** who was named director of market planning for agrichemicals. **D. STANLEY GEISER** who held that position now becomes director of agricultural communications.

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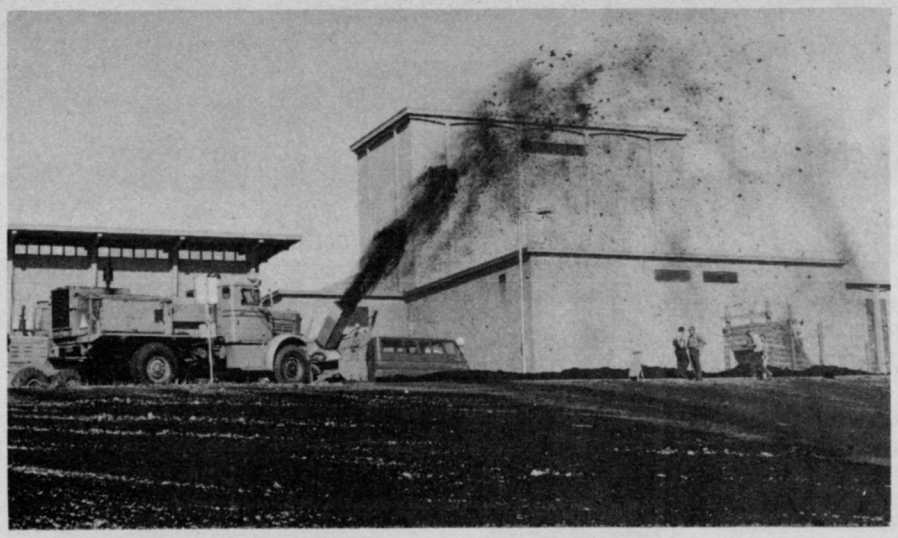

Large snowblower above makes quick work of lumpy peat in the reseeding program at the University of Alaska. Peat fell evenly over a hillside that would have not been practical to landscape by hand.

Alaska's Snowblowers Serve Dual Purpose

There's topsoil falling from the sky. And University of Alaska officials are using it to cover newly graded slopes on the campus in Fairbanks.

Physical plant personnel were not able to arrange special cooperation from the Almighty for their reseeding program, but they did the next best thing. They found that snow removal equipment can be utilized in landscaping.

"We used our snow-blower to spread peat over some of the steep slopes around the new road," said Hal Kelly, equipment supervisor. "It does a beautiful job. If we had spread the peat by hand or used a grader, it wouldn't be even, and it would be lumpy. The blower covers evenly and pulverizes the peat as fine as if it had been put through a screen."

The grounds crew dumped the peat in the road, and used a grader a plow it to one side like snow. The blower followed the grader, spewing out a black cloud of peat to fall evenly along the slope to a distance of some two hundred feet.

Such use of snow equipment for landscaping purposes is unique as far as is known. The next time the University of Alaska crew plans a further refinement of the method by incorporating the grass seed in the final layer of peat, thus saving also the last step of hand scattering the seed.

Turfgrass Researchers Honored At Penn Conference

Two prominent turfgrass specialists were cited for achievements during the annual Turfgrass Conference held recently at The Pennsylvania State University. Honored were Dr. Fred V. Grau of College Park, Md., and Dr. Joseph M. Dutch of University Park, Pa. Each received a service award plaque from the Pennsylvania Turfgrass Council.

The Penn State Turfgrass Conference was dedicated to Russell A. Smith, turfgrass research technician at the University for 36 years. Due to illness, Mr. Smith was unable to attend but was represented at a testimonial dinner by brother John, vegetable technician, who has served Penn State for 37 years, and brother William, floricultural technician, who served the University for 42 years. Regrettably, Russell Smith died two days after the conference.

The service award to Dr. Grau recognized his outstanding contributions and devotion to furthering the turfgrass industry both at home and abroad—especially for his most recent contribution as executive director of the Pennsylvania Turfgrass Council.

Dr. Joseph M. Dutch was honored with a service award plaque for his outstanding dedication as a turfgrass teacher and researcher. Duich has taught at Penn State for more than 13 years and is responsible for the success of the Turfgrass Short Course Program which to date has involved students from 22 states, Canada and Mexico.

Elected president of the Pennsylvania Turfgrass Council was Martin Stolpe of New Castle. The new first vice president is David O. Miller of Bethlehem. Second vice president is Robert Hummer of Manheim. Treasurer is David Boyd, Jr., of New Wilmington. Continuing as executive director is Dr. Grau.

Named directors of the Council were Clyde Lyons of West Middlesex, Craig Monroe of Somerset, Richard Valentine of Ardmore, William Helbling of Pittsburgh, Levi Travis of Hawley, and C. William Black of Hagerstown, Md. The Penn State Turfgrass Conference is cosponsored by the College of Agriculture and the Penna. Turfgrass Council.

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—insect report—

TURF INSECTS

CICADAS

(Okanagana spp. and Olatypedia spp.)

NEVADA: Adulya unusually heavy on rangeland and adjacent land in areas of Carson City and Douglas, Esmeralda, Lyon, Storey, and Southern Washoe counties.

WESTERN TUSSOCK MOTH

(Hemerocampa Vetusta)

NEVADA: Larvae up to two-thirds grown defoliated scattered bitterbrush (purshia tridentata) at 5,000-6,000 foot level near Galena Creek, Washoe County.

WHITELINED SPHINX

Hyles Lineata)

NEW MEXICO: Larval migration heavy on highways adjacent to rangeland in Harding County.

FALL CANKERWORM

(Alsophila pometaria)

NORTH CAROLINA: Active for third consecutive year on Coweeta Hydrological Experiment Station in Macon County. Third and fourth instars defoliated 75+ acres of hardwood on watershed, interfered with long-range water runoff experiments. Peak defoliation expected first half of July.

ORNAMENTAL INSECTS

BAGWORM

(Thyridopteryx ephemeraeformis)

TEXAS: Extremely heavy populations noted evergreens in Brazos County. Populations up to 10 per branch. Heavy populations also noted on live oaks and pecan trees in same area.

TUMID SPIDER MITE

(Tetranychus tumidus)

DELAWARE: Very common on philodendron house plants in Newark, New Castle County. This is a new State record.

SPRUCE SPIDER MITE

(Oligonychus ununguis)

FLORIDA: Nymphs and adults severely infested 90 percent of 7,450 juniper plants (Juniperus excelsa) and 90 percent of 81,000 arborvitae plants at nursery in Baker County.

LECANODIASPIDID SCALE

(Lecanodiaspis prosopidis)

SOUTH CAROLINA: Heavy infestation on wild azalea in Oconee County April 30, 1973. This is a new State Record.

SHADE TREE INSECTS

PINE COLASPIS

(Colaspis pini)

ARKANSAS: Found on 4 and 5-year old pine plantations in Calhoun and Ouachita Counties. Frequently heavy on clumps or spots of several trees. Feeding damage evident and some loss of foliage expected.

PERIODICAL CICADA

(Magicicada septendecim)

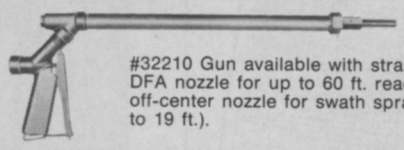
WISCONSIN: Heavy in southeastern Grant, Iowa, Green, Rock, Walworth, Richard, and Sauk counties. Predation by birds heavy; fungus disease noted on some specimens. Heavy population expected to diminish in next few weeks.

SPRINCE BUDWORM

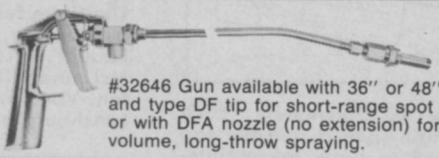
(Choristoneura fumiferana)

MAINE: Development still slow. In central Aroostook County area, around Oxbow and Ashland and in the Telos Lake country, about 90 percent of larvae in third instar. Development more advanced with more larvae in fourth instar at St. Francis and Fort Kent and in eastern areas into Washington County. Spraying operations proceeded in experimental blocks. Treatment of

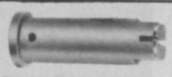
Delavan foam spray equipment reduces drift up to 60%



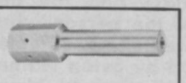
#32210 Gun available with straight stream DFA nozzle for up to 60 ft. reach, or with off-center nozzle for swath spraying (up to 19 ft.).



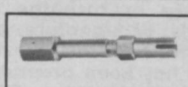
#32646 Gun available with 36" or 48" extensions and type DF tip for short-range spot spraying, or with DFA nozzle (no extension) for low volume, long-throw spraying.



Type DF nozzle tip for spray rigs or #32646 gun (above).



Type DFA nozzle for either of the above guns.



Type DFOC off-center nozzle for #32210 gun.

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With ordinary sprays and mists, coverage is inconsistent and dangerous at best, especially in confined areas where flowers, shrubs and other foliage is vulnerable. But "The Drip" utilizes a continuous film dripped onto a roller to make application. This direct contact gives you positive control and superior coverage, and avoids drift of spray.

"The Drip" is available in 3 models for covering any area, A self propelled hand model, a model "101" pull-type as illustrated, or the King-size gang of three 101 units which covers a big 9-foot swath. Write today for literature and complete details. Rubber covered rollers are available for special applications. Pat. No. 3408149

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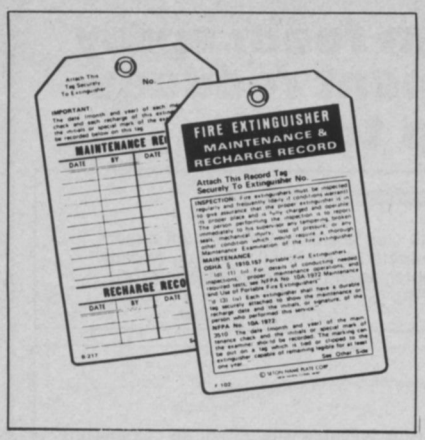


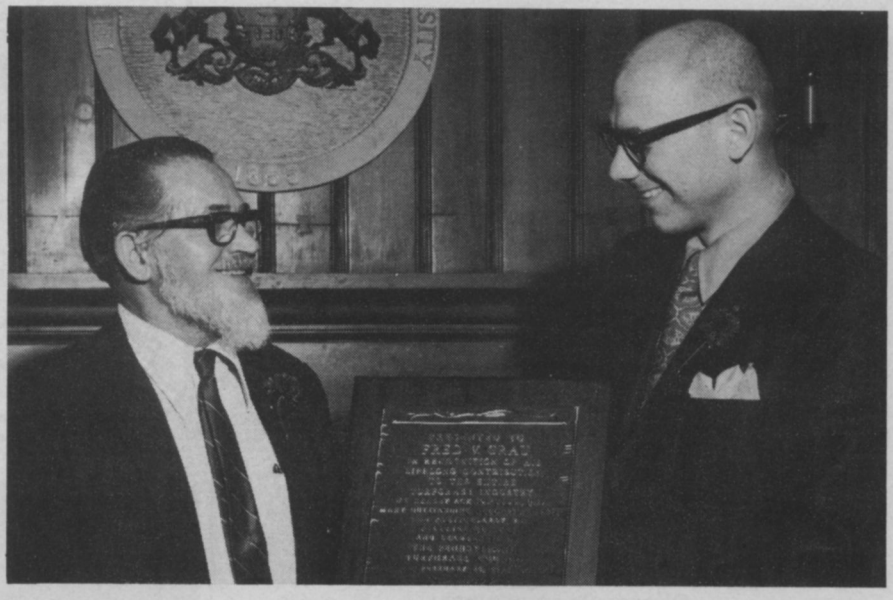
A NEW OSHA REQUIREMENT: "Each extinguisher shall have a durable tag securely attached to show the maintenance or recharge date and the initials, or signature, of the person who performed this service." This sample tag has been prepared by Seton Name Plate Corporation, 592 Boulevard, New Haven, Conn. 06519. They'll send you a free sample on request.

Green Industry Newsmakers

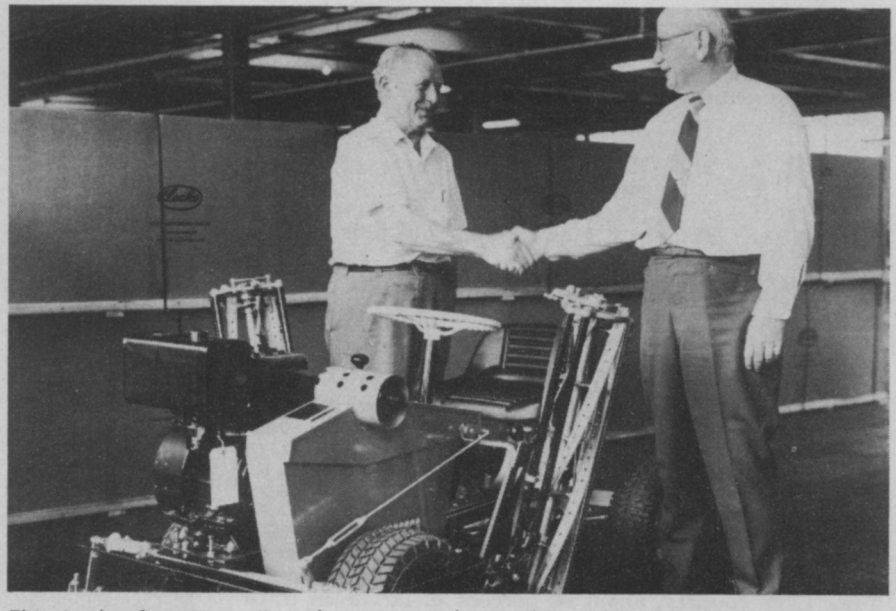
PEOPLE PLACES EVENTS

Virginia Turfgrass Council president J. L. Kidwell (l) presents R. D. Cake Memorial Award to John F. Shoulders, extension turf specialist for Virginia Tech. Award is made to individuals who have rendered outstanding contributions to the turfgrass industry.

The three fellows on the right are graduates of the Institute of Applied Agriculture, a two-year professional program at the University of Maryland. They are: (l-r) Paul W. O'Leary and George E. Renault III, both of Alexandria, Va., and James K. McLennan III of Richmond, Va. They are shown with Kenneth G. McMillan of Arlington, Va. principal speaker at the ceremony. Not present are: Lee W. Holofchak of Lynchburg and Stuart Span of Falls Church, Va.



Dr. Fred V. Grau, College Park, Md. (l) is honored for his lifelong contributions to the turfgrass industry. Here, Martin Stolpe, president of the Pennsylvania Turfgrass Council presents a service award plaque at the annual turfgrass conference at Penn State.



This is the first Maxi II reel mower to leave the Locke Manufacturing Division Bridgeport, Conn. plant. Mower was introduced earlier this year at the GCSAA Show. Pictured are shipper Louis Revelli (l) and George Wiese, vice president and general manager, Locke Mfg. Div.

Capsule News Summaries . . .

United States Gypsum Company has developed a granulation process for gypsum to be used primarily in the formulation of gypsum based agricultural products, including soil conditioners, sulfur fertilizers and pesticides. For the first time gypsum or gypsum-additive mixtures can be formed into granules of any size. The announcement was made by James S. Brinckerhoff, general manager of U.S.G.'s Chemical Division.

Ford Motor Credit Company has announced a new tractor and equipment Residual Value Lease Plan — offering lower payments and longer terms—available through Ford Motor Company tractor dealerships. "Many customers need equipment for intermediate to long periods but, for a variety of reasons, their needs are filled better by leasing than by owning the needed equipment," Says Edward C. Nevergold, executive vice president — North American Sales Financing Operations. "Ford Motor Credit Company's new Residual Value Lease Plan offers customers lower lease payments, and a wide variety of repayment options."

Automated trademark searches made from a computerized data base containing all 750,000 trademark registrations and applications in the U.S. Patent Office, are being offered by TCR Service, Inc., 2001 East Fourth Street, Santa Ana, Calif. This service helps determine whether the right to a proposal mark has been pre-empted by prior use or by registration of a substantially similar mark. These searches should be conducted before adopting a trademark to minimize the risk of advertising and promoting a pre-empted mark. A search of the TCR data base with written comprehensive report can be requested for any single name at a cost of $32.00.

The U.S. Department of Labor has suspended the effective date of a requirement regulating farm worker exposure to pesticides. The emergency temporary standard was scheduled to take effect Monday, June 18. It will be issued at a later date. The Department's Occupational Safety and Health Administration (OSHA) issued the original standard on May 1. Among other things, the standard set time limits for re-entry into growing areas treated with certain chemicals.

Scientists at the agricultural experiment station of the University of Minnesota, St. Paul, will study methods for the application of sewage sludge to land under a cooperative agreement with the U.S. Department of Agriculture. The department's Agricultural research service will provide $35,000 for this one-year study. The Metropolitan Sewer Board, St. Paul, Minn., and USDA's soil conservation service will cooperate in the study. The objective of this cooperative study is to develop safe, efficient and practical methods of applying sewage sludge to land while controlling pollution of surface and ground waters through a program of total water management.

Zonyl Fluorosurfactants Developed By DuPont Co.

The Du Pont Company has developed a new family of fluorosurfactants with properties which it described as "far superior to those of nonfluorinated surfactants."

The line of Zonyl fluorosurfactants consists of six products, five in liquid form and one solid. Anionic, cationic, nonionic and amphoteric materials are available. High effectiveness at very low concentrations (0.005 to 0.1 per cent), excellent stability in adverse thermal and chemical environments and greater surface tension reduction than other surfactants are the major attributes of the new product line.

The liquid products offer ease of handling and the broad product spectrum permits selection of those types with best combinations of chemical compatibility, physical properties, surface activity and economy.

Agricultural applications are expected to include the use of the new products as wetting agents for powders or other agrichemicals used in foliar sprays and as corrosion inhibitors for chemical applicators.

Manufacturers interested in evaluating the new products may write on company letterhead for full technical information to Fluorosurfactants, E. I. du Pont de Nemours & Co., Inc., Room 23547, Wilmington, Del. 19898.

COMPARE QUALITY WITH COST!

9 ft. 18 ft. **High Worker** DOUBLE LIFT WORKING HEIGHT 24 FT.

The 9 ft. single lift or 18 ft. double lift High-Worker mounts in any pickup. Folds down in bed for hauling materials. It will lift up to 1000 lbs. with 12 v. hydraulic system, controlled from platform or ground.

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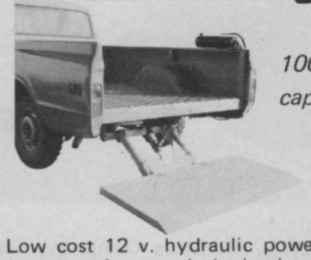
32 ft. 45 ft. **Astro Hook**

Big features at low cost! Heavy duty hydraulic 12 v. system raises, lowers telescoping boom. 360° radius rotation. Ideal for pickup truck installation. Ladders, stabilizers optional.

Power Tailgates



1000 lb. capacity

Low cost 12 v. hydraulic powered tailgate matches truck bed when closed. Heavy duty. 28" x 65" non skid steel. Mounts under truck frame for greater clearance.

"Manufacturers of Quality Truck Equipment since 1959"
Buy direct or through factory authorized representatives
CALL or WRITE
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3333 Main Dept. WT **Parsons, Kansas 67357**

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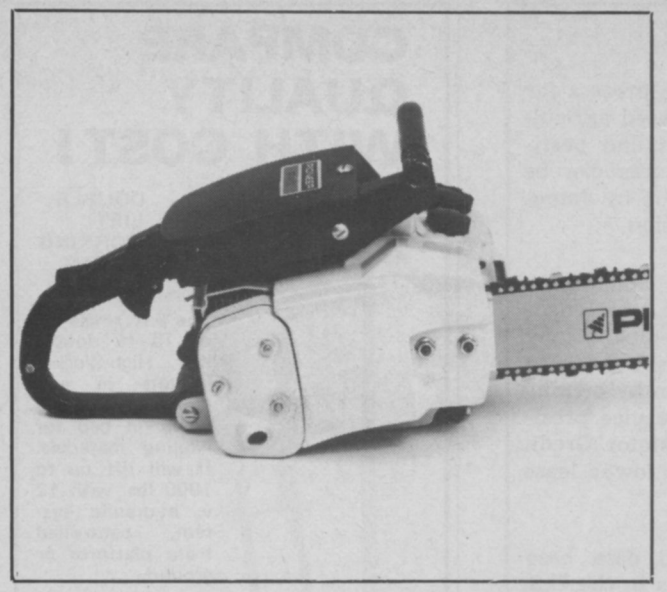
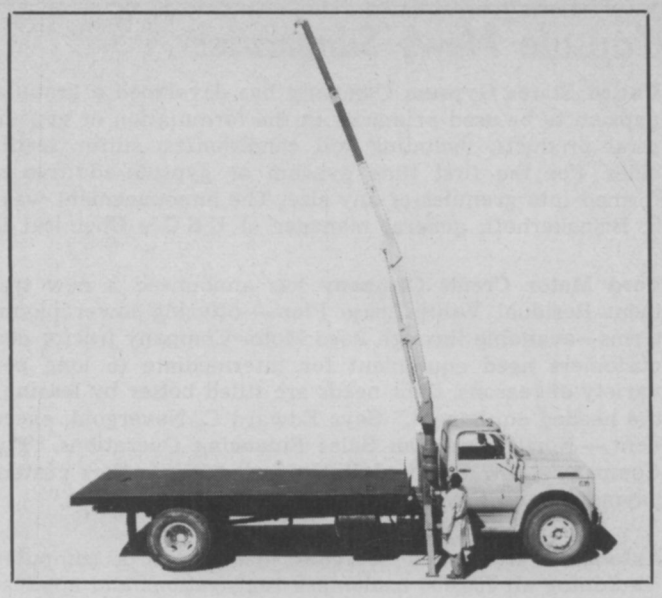


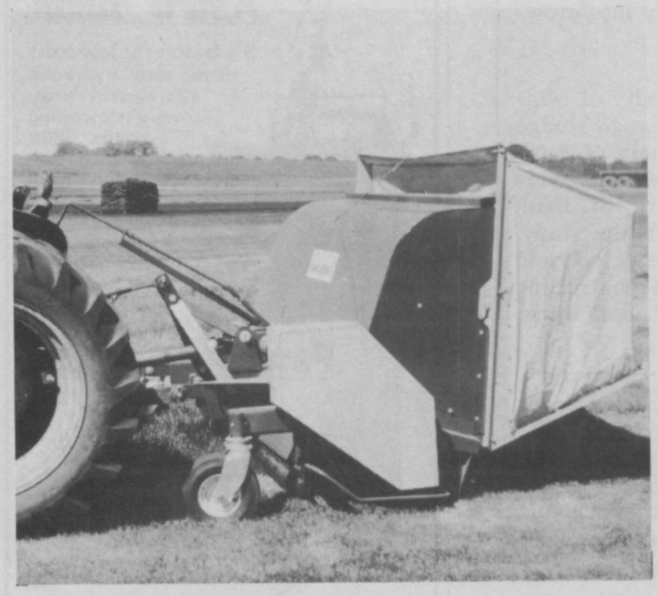
ANTI-VIBRATION SYSTEM: Pioneer Chain Saws, Div. Outboard Marine Corporation

The P40 chain saw is new to the professional chain saw market. It has an anti-vibration system that really works, according to the manufacturer. Six shock mounts keep vibration effectively from getting to the operator. In addition, saw has extra baffles in the spark arresting muffler to keep exhaust noise levels at a minimum. Other features include: a gas tank isolated from heat, a patented Posi-Lube guide bar that delivers constant lubrication to the chain and bar plus an adjustable, positive placement, automatic oil pump and an engine that develops more than one Hp per cubic inch. For more details, circle (701) on the reply card.



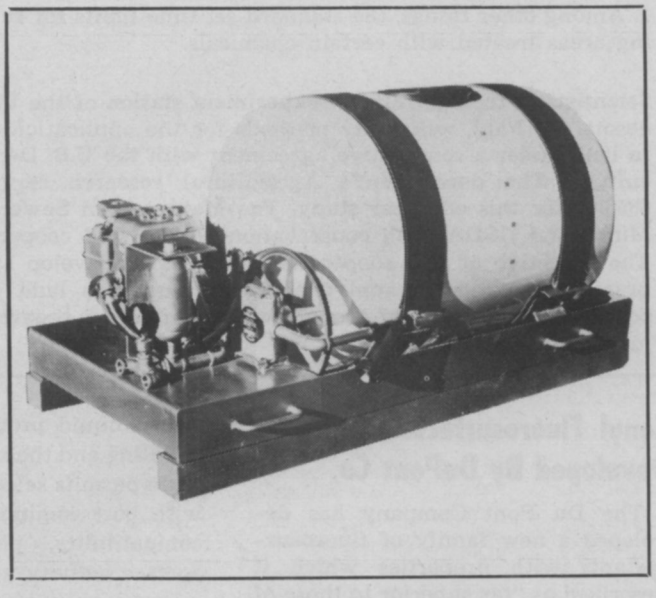
KNUCKLEBOOM: Cascade Corporation, Portland, Ore.

Here's a new truck-mounted folding knuckleboom that takes less than two feet of space between the bed and cab of a truck. It can be operated by one man. Three different models are available. Model 10C is rated 3000 pounds at a five foot radius from the side of the truck. Model 30C has a 5000 pound rating at five foot radius and the rating of the Model 50C is 8250 pounds. Maximum reach with optional hydraulic and manual extension is over 35 feet horizontally and 43 feet vertically. Other features include: dual controls, double acting cylinders, and more. For more details, circle (702) on the reply card.



LAWN GENIE: Mathews Company, Crystal Lake, Ill.

This is a bigger model to accompany an already successful smaller unit. It's a six foot wide, PTO-driven flail mower (model L-72G) that also has a 34 bushel capacity sweeper. Ideal for sod growers who pick up clippings. Also, can be used in other commercial turfgrass areas. Operator can empty the hopper without ever leaving the tractor seat. Unit attaches to tractor via three-point hitch. Flail mower is equipped with patented rotor and free-swinging knives. Accessories include a leaf-mulching screen which mounts on the mower's frame under the rear cover. For more details, circle (703) on the reply card.



SPRAYER UNIT: Edwards Manufacturing Company, Ponca City, Okla.

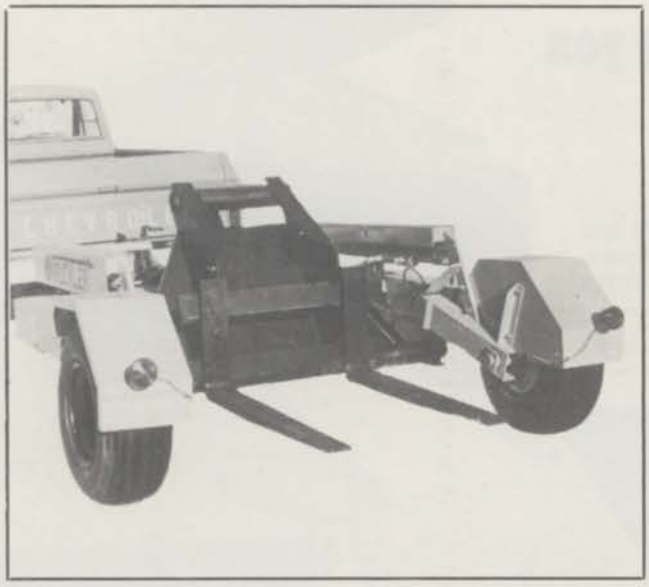
Series 6700 sprayer is a versatile, dependable unit for medium-sized spraying operations. Unit is equipped with a five Hp air-cooled engine that delivers 7 gallons per minute at 400 PSI. A dependable twin-piston pump provides a surplus of power at low RPM which adds to the operating life of the machine. Sprayer is available with a 100, 200 or 300 gallon tank. It is skid mounted or may be mounted on any one of four different trailer packages. For more details, circle (704) on the reply card.

FOAM SEAT: Logan Metal Stampings, Inc., Akron, Ohio

Most people after sitting on a tractor seat for a day are ready to find a more comfortable location. Not with the Foamhide-A seat. Unit is made from a micro-cellular urethane compound that is sprayed into a textured mold to form the "side" of the seat. Urethane "cold foam," similar to that used for automotive seats, is then poured into the closed mold, and the entire unit is cured. Result? A seat which is a virtually wear-proof, elastomeric skin, firmly bonded to the foam. Thickness and density are easily controlled. Company logos may be molded into the seat. Many colors are available. For more details, circle (705) on the reply card.

BROMOSAN SYSTEMIC TURF FUNGICIDE: W. A. Cleary Corporation, Somerset, N.J.

Regular use of this new product will give superior year-round prevention and control of all major turf diseases, according to the manufacturer. Used as directed on tees, fairways and greens, or any fine turf area, product effectively curbs dollarspot, copper spot, brown patch, Helminthosporium, red thread, Fusarium roseum, pythium and snow mold. This fungicide is a blend of Cleary's 3336 and thiram. For more details, circle (706) on the reply card.



FORK-LIFT TRAILER: Truckler Div., Harvestall Industries, Inc., New Hampton, Ia.

This unit is designed for pallets and boxes. Should be ideal for the sod grower or installer to move pallets to the job. Back up trailer to the load, pick it up and away you go. Load dimensions of 51 inches wide and up to 12 feet long. Hydraulic cylinder raises and lowers forks. Unit can be easily pulled behind a pickup truck. Capacity is 5,000 pounds. For more details, circle (707) on the reply card.

TURF-AUL: Stockton Specialty Vehicle Div., Otis Elevator Company, Stockton, Calif.

Here's a turfgrass equipment vehicle that has a payload capacity of 1000 pounds. It's ideal for the superintendent who must travel a course regularly. Combines the unique design of a golf cart with the versatility of a truck. Features automotive steering, diamond plate steel cargo box with stake pockets, three speeds forward and one reverse transmission, hydraulic internal expanding brakes, excellent suspension and large turf tires. Weight is just over 1000 pounds. Unit is powered by a two-cylinder, four-cycle air cooled engine which develops 18 Hp. For more details, circle (708) on the reply card.

ONE MAN, TWO COURSES

(from page 20)

grass course is aerified in the early spring and fall and needs irrigation to nurture it through droughts.

"For most turfgrass operations, you just have to tell the crew exactly what to do each time, and then supervise," Shields says. His son Glenn helps lighten the load in this regard, since he's helping finance a college degree in turfgrass management by working as his father's assistant.

Variety is the spice of life, Shields agrees. Electricity, plumbing, record keeping—and turfgrass management—are just a few of the areas he gets involved in while keeping the Woodmont grounds attractive and functional for club members. Having two courses with different management needs just adds a little more challenge to the job.

Cleary's 3336 Turf Fungicide Receives New EPA Label

Cleary's 3336 Turf Fungicide has now received registrations from the Environmental Protection Agency for the control of 7 major diseases. They are: dollar spot, copper spot, brown patch, red thread, Helminthosporium, Fusarium roseum and pythium.

While the registration provides for all areas of the golf course, the versatility of Clear's 3336 is unique in that many golf course superintendents report excellent results and superior color on fairways as well as greens and tees.

The manufacturer claims the new fungicide is well suited as an all-season fungicide. Packaged in 2 lb. bags.

More information is available on Cleary's 3336 from W. A. Cleary Corporation, P.O. Box 10, Somerset, N.J. 08873.

Parker Sweeper Company Publishes New Catalogue

The Parker Sweeper Company has just published its 1973 catalog of lawn care equipment. The full-color catalog offers complete details and photographs of Parker's extensive line of lawn sweepers, vacuums, blowers, and power rakes.

The 1973 catalog with detailed specs on the entire line of Parker Lawn Care Equipment can be obtained free simply by writing to the Parker Sweeper Company, Box 720, Springfield, Ohio 45501.

Norfolk And Western RR To Promote Greenbelt

The Norfolk and Western Railway has announced plans to begin establishment of a "green belt" around its coal piers, in Sandusky, Ohio. The effort will improve the environment and beautify the Lake Erie waterfront.

Working with local soil conservation officials of Erie county, Ohio, staff members of the Pocahontas Land Corp., an NW subsidiary, will plant Austrian pines north of Monroe Street near Mills Creek.

The "green belt" is a part of the railroad's continuing ecology program. Earlier this year the 14-state carrier planted several thousand trees and seeded embankments in Norfolk, Va. Similar projects are being planned at other locations across the NW's 7,600-mile system.

The pines are being purchased from Barnes Nursery and Garden Center of Huron, O.

An Asplundh Chipper makes you more money than you bargained for.

Drop us a note for more detailed literature and specifications. Asplundh Chipper Company
50 E. Hamilton Street, Chalfont, Pa. 18914

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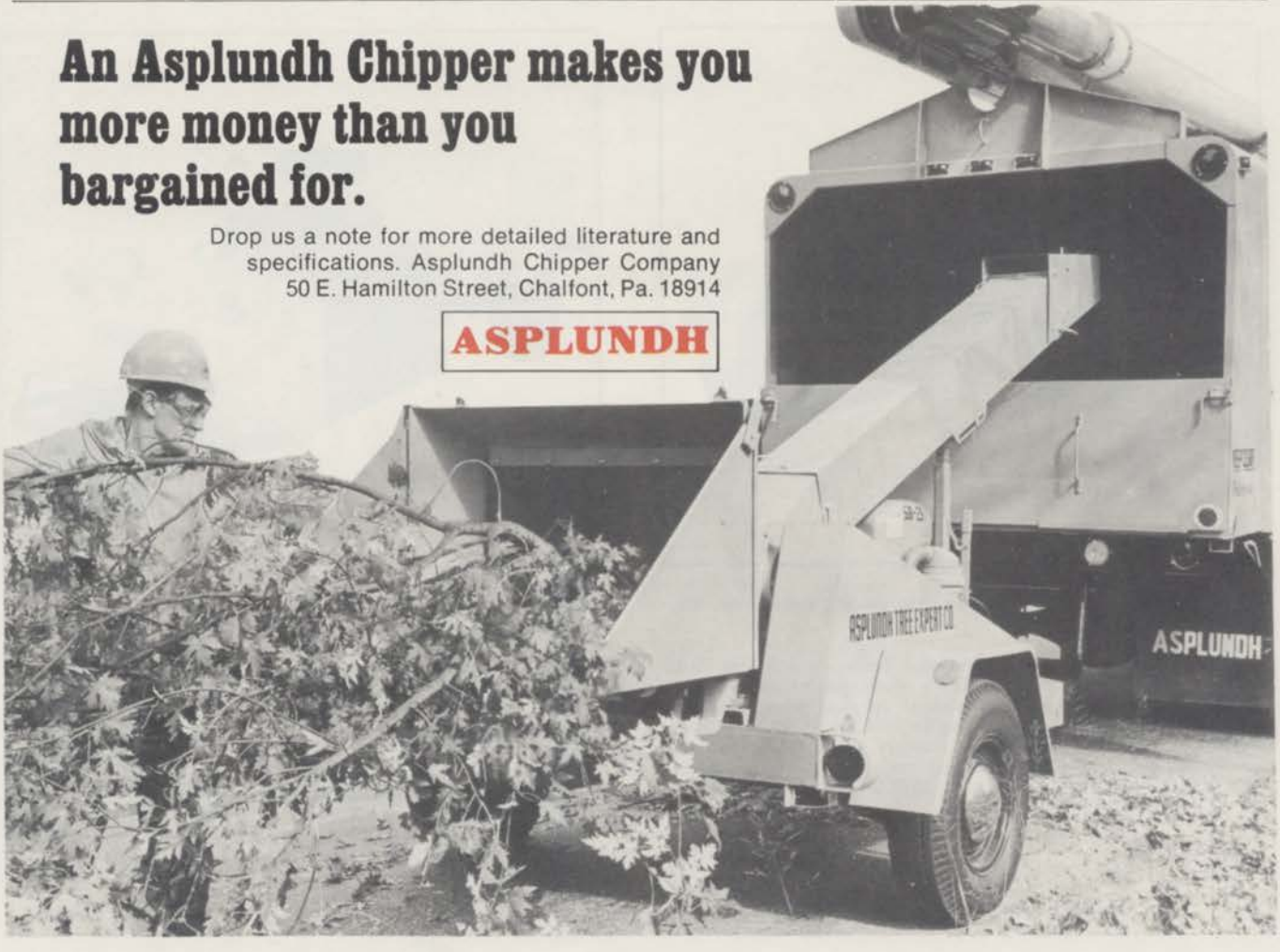

San Vicente C. C./Ramona, California
Ready for play one year after start of construction.

Choosing an automatic controlled system should be like going to a good smorgasborg: the more you have to choose from, the greater your satisfaction will be.

That's why it's important to get together with Buckner during your initial planning stage. Because Buckner makes seven different types of controllers—more than anybody else.

And that means that Buckner can work with these seven systems to deliver exactly the control system your course should have. These systems range from sophisticated two-wire, solid-state set-ups to basic units where cost is the prime requisite:

Binar® offers the ultimate in two-wire central control. Eliminates field controllers and miles of costly wire. Solid state circuitry provides trouble-free performance. You can scramble individual control valves for maximum program flexibility.

CP-2 provides advanced central programming where field controllers are needed for on-course inspection and maintenance. Syringe and omit cycles. Watering of fairways, tees and greens can be completed in less than nine hours.

711 is the perfect automatic in-field controller for large turf areas. This 11-station system features 0-60 minute control. Waters fairways, greens and tees in less than nine hours.

The ICM series offers three systems: The 12E has 12 control stations, the Dual 12E has two 12E units with two clocks, and the 24E has 24 control stations and one clock, where longer watering times are permissible.

The BR-10 delivers dependable performance at a rock bottom price for a dual program with ten stations.

If you're planning new watering systems, now's the time to get together with the Buckner Agri-turf Division of Johns-Manville. We'll take the time to figure out exactly what you should have. Then we'll supply it. Because we have more kinds of controllers, heads, valves and pipe than anybody in the business.

Buckner®

Agri-turf Division, Johns-Manville, P.O. Box 232, Fresno, Ca. 93708

Now you can get exactly the automatic control you need:

Because we make more automatic controllers than anybody else.

Buckner Agri-turf Division, Johns-Manville can do more for you. Because we have more to work with.

☐ I'd like information on Buckner automatic control systems.
☐ I'd like to talk to a Buckner expert about a Buckner system.

Name_____ Title_____

Address_____

City_____ State_____ Zip_____

Telephone_____

Dept WTT

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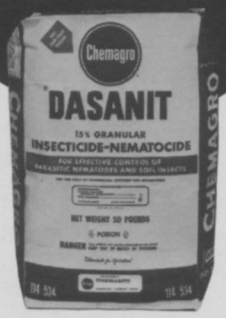
PROTECT TURF FROM NEMATODES



Now it's easy to control nematodes that destroy roots, cause unexplained spotting, stand reduction of fine turf.

Simple, labor-saving control: merely **broadcast** ®DASANIT nematicide, then **water-in.** One application lasts all season.

Chemagro *RESPONSEability to you and nature*

Division of Baychem Corporation
Box 4913, Kansas City, Missouri 64120

73107-2

For More Details Circle (115) on Reply Card

CRABGRASS PROTECTION

(from page 22)

tournament time.

Schmitt went into a high maintenance program two weeks before the tournament. "We normally mow the fairways once a day, at a height of 1¼ inch," he said. "As the tourney approaches, we cut twice a day at a cut of ¾ of an inch."

The greens were also under special care. During this same period, a top-dressing program was initiated with a 1:1:1 ratio of peat, soil and sand. It takes approximately 50 yards of material to top-dress all the greens.

As Schmitt explained it, "Once the greens are top-dressed, we mow at normal heights for a week—this gives us time to get the greens cleaned up. We then start mowing at the tournament height of 3/16 inch twice a day.

"Spraying the Dacthal by helicopter was definitely more expensive than putting it on through a ground sprayer."

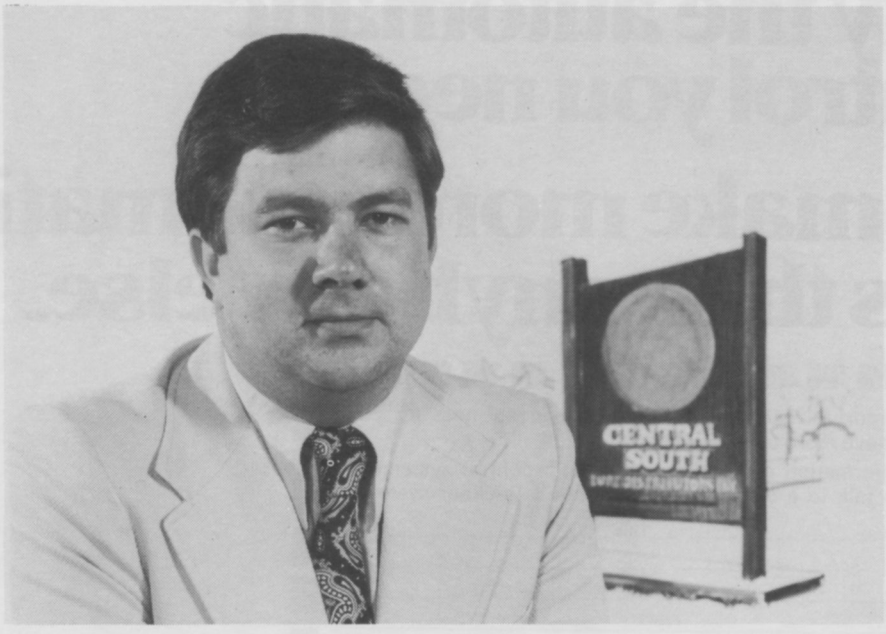
"But we had no other choice. It was either the chopper or the crabgrass. However, with as much rain as we had, I would never have been able to apply the material in time by any other method. It was a lifesaver and I'll use it again whenever the conditions merit," he concludes. □

Chopper quickly sprays this course with Dacthal to prevent germination of crabgrass. Rate of application was 16 pounds per acre.

New Toro Distributor Located in Nashville, Tenn.

Central South Turf Distributors, Inc., a new, independent franchised distributor for the full Toro line of powered equipment for lawn and turf maintenance and irrigation, will be established in the Nashville, Tenn. area this month. The firm will serve the marketing area of Kentucky, central Tennessee and southern Indiana.

Stephen C. Asbury, president of the new firm, will make his headquarters in a new building (2837 Logan Street) in Nashville that has 14,000 square feet of space available for offices, service facilities, a depot for parts and irrigation supplies, as well as for a full inventory of Toro machines and allied lines. Asbury said his company will also establish a distribution outlet in Louisville.



According to David T. McLaughlin, president of The Toro Company, of Minneapolis, the new distributorship encompasses a territory formerly served by three separate distributors: The Bill Voorhees Company, of Nashville (consumer products only); Ernest Hardison Seed Company, also of Nashville (for turf and irrigation products); and Bunton Seed Company, of Louisville (turf and irrigation products).

Asbury, who is 32, comes from Toro headquarters in Minneapolis where he has been government sales and product manager for the turf products division. He joined the company in 1965 as district marketing representative on the east coast and had since held increasingly responsible posts.

He is a native of St. Paul, Minn., and a graduate of Northwestern University where he received a bachelor of science degree in business administration in 1963. The following year he attended the University of Minnesota where he did graduate work in marketing.

Asbury is married to the former Barbara E. Scott, of Chicago.

WAKE UP...
TO EDWARDS QUALITY.

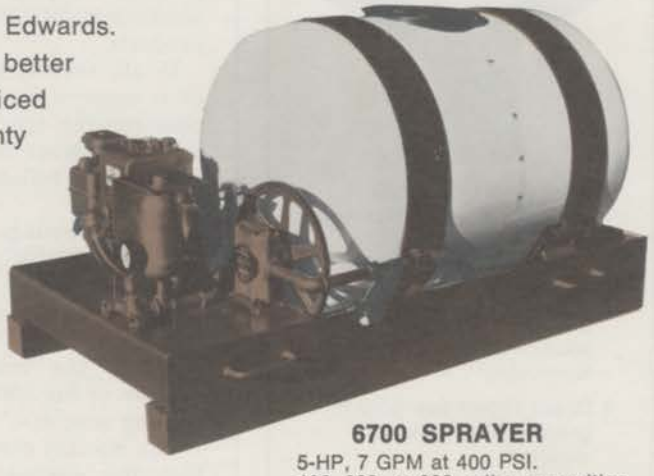
If your job calls for spraying, you need to know about Edwards. We have a broad line of spraying equipment that's built better than anything else on the market. Our sprayers are priced competitively and are backed by the strongest warranty in the industry.

What this means to you is dependable, economical performance.

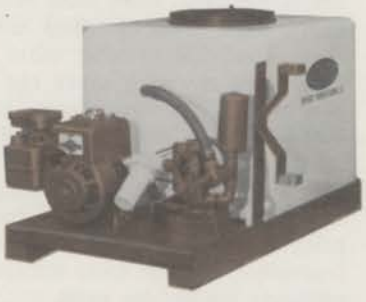
Edwards Sprayers, mounted on skids, fit easily onto turf-maintenance vehicles or truck beds — even the compacts. Or, you can choose any of five different trailer kits. Edwards has the full range of options: choice of mountings, booms, hoses and reels. Attachments go off and on in seconds, so you can switch from one type job to another without losing time.

Edwards uses only fiberglass tanks because fiberglass is light, strong and won't rust. We've eliminated pulsation problems with two bladder-type accumulators — standard on all piston-type models.

When you think of sprayers, think of Edwards.

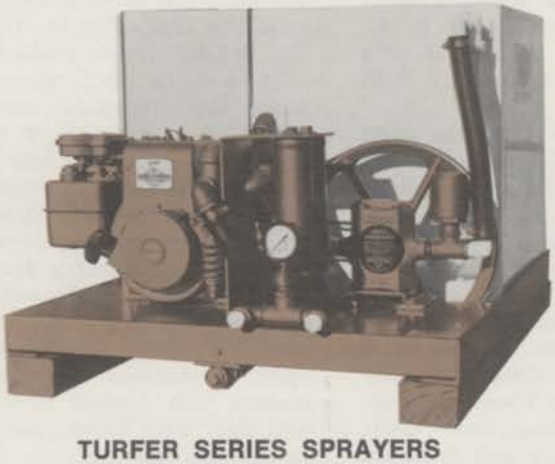


6700 SPRAYER
5-HP, 7 GPM at 400 PSI.
100, 200, or 300 gallon capacities



6100 and 5300 SPRAYERS
3-HP, 50-gallon models with
3 gallons per minute, 150 PSI to 400 PSI.

5425 SPRAYER
18-HP, 25 GPM at 600 PSI.
400 or 500 gallon models.



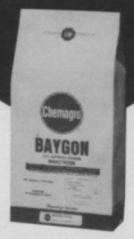
TURFER SERIES SPRAYERS
5-HP, 100-gallon model availabe with 3
different pumps producing from 7 to 40 GPM.

NICKEL 12 SPRAYER
10-HP, 12 GPM at 600 PSI.
200 or 300 gallon models available.

Edwards Manufacturing Company
P.O. Box 1275
Ponca City, Oklahoma 74601
(405) 765-9804

For More Details Circle (152) on Reply Card

CONTROL SOD WEBWORMS



- ®BAYGON insecticide provides effective clean-up, long-lasting residual activity.
- Compatible with most commonly-used non-alkaline insecticides, fungicides.
- Doesn't harm desirable turf grasses when used as directed.

Chemagro *RESPONSEability to you and nature*

Division of Baychem Corporation
Box 4913, Kansas City, Missouri 64120

73107-1

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"THE RIGHT APPROACH" TO GOOD TURF
FOR EXPERIMENTAL USE ONLY
CHIPCO SPOT KLEEN
TURF FUNGICIDE
CAUTION: KEEP OUT OF REACH OF CHILDREN
NET WEIGHT TWO POUNDS

Chipman Division of Rhodia, Inc. has announced Chipco Spot Kleen has been registered by EPA. The turf fungicide will control dollarshpot, Fusarium blight, large brown patch and stripe smut. It is a long residual, nonmercurial, systemic fungicide that is available as a wettable powder. For more details circle (720) on reply card.

Training Courses For Mauget Products Completed

Twenty meetings, beginning in January and ending in June, have been held by the J. J. Mauget Company, Burbank, Calif. Purpose of the meetings, according to Del Kennedy, vice president, was to expose the commercial arborist to the professional approach of using and marketing Mauget tree injection products.

In all, several hundred tree company owners, landscape contractors, pest control operators, golf course superintendents and Federal, state and local officials were in attendance.

In the meetings Kennedy pointed out that Mauget products are "just another valuable tool that can be added to the services your company is already doing. We're not suggesting that the commercial operator dispose of his spray rig or deeproot feeding machine," he said.

The Mauget executive pointed out that the commercial arborist can use Mauget products on weak and declining trees, trees with restricted roots, trees with blacktop and concrete obstructions and other areas where the use of a spray rig is impractical. The advantages to this method, according to Kennedy are: no tissue removed, no chemicals outside the tree, a uniform disage distributed to all parts of the tree, application in high winds or rain and treatment of large trees which other methods cannot be used.

Among the items discussed at the meetings were the use of the 65 ml cups with Benlate benomyl fungicide as an aid in the control of Dutch Elm Disease. Those in attendance received instruction and training in order to comply with the Federal label.

Kennedy also reviewed the newest registration, Inject-A-Cide B, and its use in the control of aphids, scale insects, elm leaf beetle, red spider mite, southern pine beetle and other leaf chewing and sucking pests.

Several guest speakers were on the program in the various cities where the meetings were held. They included: Dr. W. D. Thomas, Natural Resources Management Corp. who told applicators and arborists that systemic injectors are becoming more commonplace due to environmentalist activity. Dr. Jerold Johnson of Texas A&M University explained the results of his research with Mauget injectors in the Texas area. Dr. R. V. Sturgeon of Oklahome State University indicated that he planned to conduct tests this year on the system.

Kennedy concluded the training courses in Boston. He said that if enough interest develops, more training sessions will be held next year.

Hort, Research Institute Studies Root Regeneration

The Horticultural Research Institute's latest project is the study of root regeneration in shade trees.

According to HRI President Evert Asjes, III, Rosehill Gardens, Inc., Kansas City, Missouri, the rate at which a transplanted tree reroots is a factor that limits the range of plant materials available for landscaping use.

"A number of excellent shade trees are difficult to move because they do not form a new root system quickly enough," says Asjes. "Recognizing this problem, HRI has provided a grant to Dr. Charles E. Hess, dean of George H. Cook College at Rutgers University."

This grant is intended to encourage investigations on the nature of root regeneration in oaks, and particularly to define the systems responsible for poor root regeneration in the pin and scarlet oak.

Dr. Choong II Lee, under the guidance of Dr. Bruno Moser of the Rutgers Horticulture Department, is conducting research on the regeneration rate in oaks seeking an understanding of the basic mechanisms that determine the ease or difficulty with which plants recover from transplanting. Such knowledge then would be applicable to other plants that exhibit similar problems.

These studies, in progress now, indicate that transplant survival depends on a number of variables, among which are the rate at which roots regenerate, the ability of the plant to tolerate water stress during the period of root regeneration, the level of plant hormone translocated to the injured roots, and the resistance of the injured roots to disease entry. Each of these factors is open to manipulation. Subsequent studies, also funded through HRI, will deal with techniques designed to enhance survival.

"The results of this research will be significant to all segments of the nursery-landscape industry," comments Asjes, "and leads to a better understanding of the root regeneration systems of shade trees, as well as possible solutions to the current transplanting problems."

When it comes to new nine-gang mowers, here's where we stand.

Meet Bob Snider, of Moon Equipment Company, the Jacobsen Distributor in Cincinnati, Ohio. He was one of the first customers for the big news in mowing tractors from Jacobsen.

The new *nine*-gang F20.

Like all the rest of us Jacobsen Distributors, Jacobsen had to sell him first before he takes on any new Jacobsen equipment. The reason: he's an independent businessman. That makes him a buyer before he's a seller. And that means he's convinced the new F20 will perform the way it's designed to.

For instance, the F20 is designed to get the big jobs done in a big hurry. And it does. Because it cuts a huge 19 foot swath, it can mow about 76 acres in a 8-hour day. And move between mowing areas up to 25 M.P.H.

Equipped with rear wheel steering, the F20's reels turn in the same arc as the steering wheels. The result? No skipping, no skidding, no uneven cutting in the turns. And because the wheels are behind the mowing units, there are no wheel streaks in the straightaways, either.

It's also highly maneuverable. Gets close to bushes or buildings, in and around trees. The rugged front drive delivers sure traction on grades and sidehills. And the front mowing technique gives the operator a safe, unobstructed view of the cutting area and outboard mowers.

About versatility: all nine reels may be lowered and raised from the driver's seat with finger-tip controls. Use any combination of reels for cutting. Median strips are cut right from the roadway with an outboard mowing unit.

We also sell a seven-gang F10 mower. It works just like this new nine-gang model, and cuts a 15 foot path.

For the really big mowing jobs come and see any of us Jacobsen Distributors for the new nine-gang F20.

We're always up on the latest developments.

Your Jacobsen Distributors

Before we sell it, we buy it.

For the name of the distributor near you write: Jacobsen Turf Distributor Directory, 1721 Packard Avenue, Racine, Wisconsin 53403

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VERMEER TREE EQUIPMENT DIVISION

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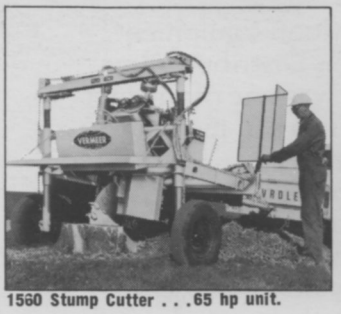


1560 Stump Cutter . . .65 hp unit.

2460A Stump Cutter . . .65 hp unit.

CHEMICAL FIRST AID

(from page 16)

A Herd granular applicator, mounted on the deck of an outboard powered Boston whaler, was used for application of Casoron G-10 granules.

Matching the boat speed to the application rate resulted in a uniform granule distribution pattern on water surface, granules rapidly sinking to bottom with minimum dislocation. The Casoron granule has excellent sinking qualities and, when applied on the surface, makes the same even pattern on the lake bottom.

As a result of Casoron's excellent performance in 1972, treatments were made again at Westlake in February of this year under the same application rates, methods and conditions. Dr. Jordan, of the University of California, who has worked closely with the lake project from its beginning, reports that the product does a very satisfactory job in aquatic weed control in the lake project. He believes that it is probably the best product currently available for this purpose.

Bert Dell, lake manager, who has worked with the University of California and Thompson-Hayward Chemical Company personnel, and who more than anyone else is responsible for starting the project, is satisfied with Casoron and feels that it has done an excellent job in lake weed control without disturbing the ecological balance of the lake system.

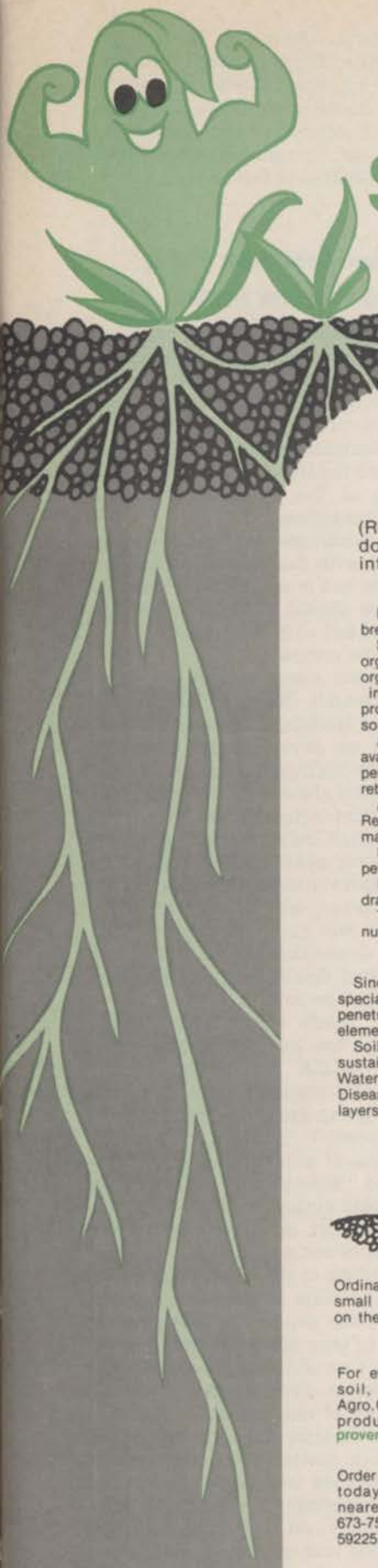
"Casoron will be used in a continuing program of control as long as it performs satisfactorily in the lake maintenance program," says Dell.

End result of the treatment for aquatic weeds is shown above. Residents can now use lake without entangling motors and fishing lines in aquatic vegetation. To date over $60,000 has been spent in managing the lake and achieving a long range, biological balance throughout the lake's ecosystem.

To date over $60,000 has been spent in managing the lake maintenance program aimed at achieving a long range, biological balance throughout the lake's ecosystem. Westlake residents are helped to an understanding of this program, through their community newspaper.

They are told about the capabilities and limitations of chemical compounds, recommended application procedures, effect of chemicals on aquatic life forms, and proper safeguards to insure safe and effective use of chemicals in aquatic weed control programs.

This continuing informational program, detailing the progress of the aquatic weed control project in the lake, has resulted in a common sense acceptance by the Westlake residents of the necessity for such a chemical aquatic weed control program in the lake. □



AGRO·CHEM

SOIL REBUILDER

"The Productivity Improver"

A Totally New, Organic Product

(Releases the pressure of compacted, tight soils so as to allow roots to grow down deeper. Soil Rebuilder encourages grass to grow in thick and natural into bare and thin areas.) HELPS TO DEVELOP DEEP STRONG ROOTS.

In this age of ecology, Agro.Chem's organic Soil Rebuilder has been created to let nature itself breathe life into the earth.

Soil Rebuilder is a natural organic combination of plant by-products, decomposition by-products, organic extracts, bacterial by-products, and many organic complexes found in highly productive organic soils.

incubated for 7½ weeks under stringent conditions, Soil Rebuilder is guaranteed to be a pure, productive product. When applied by sprayer, Soil Rebuilder loosens tight, compacted soils, coats soil particles with organic matter and helps develop productive soil aggregates.

At work, Soil Rebuilder increases organic matter, bacteria, bacterial decomposition and the availability of plant food and micro nutrients. Recharging the soil with life by increasing the penetration of air, water and nutrients deep within the soil, Soil Rebuilder helps Mother Nature rebuild her soil naturally.

All of these reactions help develop a Deep Root System by making fertilizer work better. Soil Rebuilder lessens the need for extensive watering, fertilizing and weed control, thereby reducing maintenance costs.

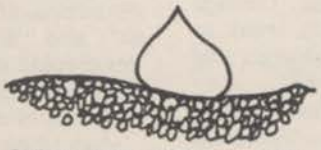
Soil Rebuilder is non-toxic and completely safe to use on all soils. It is harmless to humans, pets and wildlife, too.

For improved productivity, try Agro.Chem's Soil Rebuilder. No other product can produce such dramatic, natural results because no other product is produced in such a natural manner.

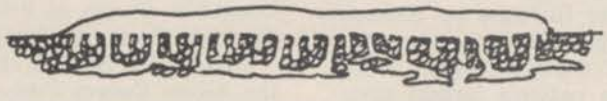
Try this on your ground this year. Notice the improved results within a few weeks—water and nutrients penetrate and help fertilizer work better.

Since plant roots only absorb liquid materials, Soil Rebuilder was created to make water react in a special way. Agro.Chem calls this special water FLAT WATER. FLAT WATER is an active, live water that penetrates and recharges the soil with life-producing Fertilizer nutrients, Liquid nutrients, Air, Trace elements.

Soil Rebuilder draws these vital elements deep into the soil and root system. Bacterial action is sustained and plant nutrients are made available to build soil aggregates and improve soil texture. Result: Water, air and fertilizer penetrate faster and make soil more productive, roots are deeper and stronger. Disease and insect infestation are reduced drastically because moisture retention in the Matt and Thatch layers is reduced. Plants grow thicker, are more healthy and beautiful.



Ordinary water cannot seep into small soil openings. It just stays on the surface and evaporates.



Flat water creeps and seeps into tight soils—coats soil and makes it more productive. Brings air, water and fertilizer deeper into soil to develop strong roots, healthier plants and lasting beautiful results.

For everything that grows in the soil, try Soil Rebuilder and all Agro.Chem products. Agro.Chem products are "productivity improvers."

Order your performance package today. Contact Agro.Chem for nearest distributor. Phone 312/673-7500 or by letter to: P.O. Box 59225, Chicago, Ill. 60659.

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®DYLOX insecticide provides excellent control of ravenous insects that destroy fine turf.

Easy-to-use formulation mixes with water; doesn't corrode sprayers.

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Phosphate Rock Crisis Is Real Says Agrico

The U.S. is facing a phosphate rock crisis that may be similar to the current "energy crisis." But the U. S. has alternate supplies of energy in its vast coal and shale reserves and its nuclear potential while the phosphate rock supply is irreplaceable.

Those statements were made to The Fertilizer Institute by Kenneth F. Lundberg, chairman of Agrico Chemical Company. Agrico owns some of the nation's largest phosphate rock reserves in Florida and North Carolina.

Phosphate rock is essentially the only source of the phosphate component of chemical fertilizers.

"Present phosphate supply capability in the world market faces a critical point in the mid-1980's. Some will predict that our U. S. phosphate industry will be on a downhill slide from that time on. However, I would remind the pessimists that the resourcefulness of our people and our system to rally to a need is well known.

"It is my judgement that the U. S. phosphate industry will continue to be an important world supplier with increasing emphasis on upgraded products.

"That is exporting our phosphate rock in the form of upgraded phosphate products or wheat, soybeans and meat.

"We have that opportunity because the outlook for U. S. agriculture and agriculture throughout the world has never been brighter," Lundberg said.

Lundberg predicted that if U. S. producers are to hold their percentage position of world requirements, by 1985 mining capacity dedicated exclusively to export must be increased 12,000,000 tons in addition to 13,500,000 tons of additional rock capacity required for increased domestic demand.

$7850 In Awards And Grants Won By Students And Colleges

Scholarships to students, and three financial grants for research, were awarded during the annual Turfgrass Conference held recently at The Pennsylvania State University.

The U. S. Golf Association turfgrass breeding research grant of $2000 was received on behalf of the department of agronomy by Dr. James L. Starling, department head. This grant has been awarded annually since 1947.

The Golf Course Superintendents Association of America turfgrass research grant of $1200 was received for the college of Agriculture by Dr. Herbert Cole, Jr.

Dr. Thomas L. Watschke accepted the Winter Course Alumni turfgrass research grant of $1200 for the department of agronomy.

Pennsylvania Turfgrass Council scholarships of $500 each went to Donald S. Danyo of Pittsburgh and David P. Porter of Altoona.

Michael T. Hess of Hawley won the Albert Cooper Pocono Turfgrass Association scholarship of $400. Twelve of the 13 winners are enrolled in the two year winter course in turfgrass management at Penn State.

The Finger Lakes Golf Course Superintendents Association of American scholarship of $300 went to David L. Allen of Clifton Spa, N. Y.

Scholarships of $250 each were awarded to nine students by the Penncross Bentgrass Growers Association of Oregon. The winners were Winfrey P. Bunton of Louisville, Ky.; Dennis R. Cox of Cuyahoga Falls, Ohio; Jeffery S. Edwards of Altoona; John D. Foster of Crooksville, Ohio; Richard W. McConnell of New Castle; Lewis S. Morgan of Alliance, Ohio; David W. Ruley of Marion, Ind.; Dennis J. Salettel of Lyndhurst, Ohio; and Kim M. Sheffer of Dover.

Landscape Contractor Prexy Outlines Problem Areas

"Pre-qualification should apply to all landscape contractors whether they are working as prime or subcontractors," said Jerry J. Lankenau, president of the Associated Landscape Contractors of America as he addressed the Roadside Development Meeting of the Highway Research Board Committee.

"The landscape contractor should be listed with the general contractor when the bid is submitted. Past performance should always be considered, and not only the financial position of the company."

Lankenau, summoned by the Highway Research Board Committee to provide a landscape contractor's perspective on governmental contracts involving highway work, was also critical of maintenance of work after the contractor has left the job.

"Too often we'll find that a project began with good specifications, had good supervision during the period of guarantee, but afterwards little attention was given the project. This greatly diminishes the results of our efforts and disallows much pride in our work," he said.

Other points of criticism which Lankenau had heard voiced recently by the ALCA membership were: "Lack of communication between the designing group and the inspecting engineer"; "Lack of contractual definition of substitution of material"; and "Selection of materials in geographic areas where the material does not exist, or in times when the material is not available."

According to the association president, a problem as yet unresolved in much of the country is unit pricing. It fails to take into account the economy of size. An unresolvable problem almost everywhere is public disclosure of unit prices.

"A contractor hungry for a job will, as a matter of course, review the published unit prices and shave off a percentage," he said. "He may lose money on the project, after which his unit prices are published, and the next guy pulls the same trick because he's hungry and he'll eventually lose more money than the first guy. In the long run, everyone loses."

— classifieds —

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

Rates: "Position Wanted" 10¢ per word, minimum $3.00. All other classifications 20¢ per word, minimum $4.00. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment. Boldface rule box: $25.00 per column inch.

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SALES REPRESENTATION: Washington, D.C. (Government), Virginia, Maryland, and Delaware. Seasoned sales organization can handle equipment, turf related chemicals, or specialties. We can tailor our marketing capabilities to meet your needs. W. H. Chadbourne, Agronic's, Inc., 10818 Fairchester Drive, Fairfax, Virginia 22030. Phone 703 471-9660.

HELP WANTED

WASHINGTON TREE SERVICE, Inc. in Seattle has openings for 2 experienced climbers-trimmers. If you have background and experience to do quality work and are a sober, responsible person, this could be the opportunity you have been seeking. Year 'round job, excellent benefits including profit sharing plan. Relocation allowance to qualified persons. Write or phone: Lou Vaughn, Washington Tree Service, Inc., 20057 Ballinger Road, N.E., Seattle, Washington 98155. Phone 206 362-9100.

DISTRIBUTORS for D. J. Andrews, Inc. stump cutter teeth, pockets and bolts. Best wholesale and retail price in U.S.A. Add to this exclusive area, local advertising at our expense, etc., and you have our story. D. J. Andrews, Inc., 17 Silver St., Rochester, N.Y. 14611. Call 716 235-1230, or 716 436-1515.

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SOD QUALITY MERION SEED for discriminating growers. Also Fylking, Delta, Park, Newport, Nugget and Pennstar bluegrasses as well as fine fescues. We will custom mix to your specifications. Michigan State Seed Company, Grand Ledge, Michigan 48837. Phone 517 627-2164.

CROWNVETCH SEED: Penngift and Chemung varieties. Direct all inquiries to: Walter C. Mehlenbacher, Castile, New York 14427. Phone 716 493-2553.

ALL VARIETIES, straight or mixed to specifications, bluegrasses, fescues, bents, others. Markell Seeds, P.O. Box 3397, Green Bay, Wisconsin 54303. Phone 414 437-0851.

FOR SALE

DOUBLE EDGE sod cutter blades. Will fit any Ryan sod cutter. Works like double edge razor blade. Cuts much more sod per blade. Made to bolt on both ways. $24.00 plus postage. New automatic sod loaders for direct loading to pallets, trucks or trailers. No workers needed on ground. Both products developed and designed by Hadfield. Write or call Glen Hadfield, 4643 Sherwood, Oxford, Michigan 48051. Phone 313 628-2000.

IDEAL 5-ACRE RANCH. Lake Conchas, New Mexico. $3,475. No Down. No Interest. $29/mo. Vacation Paradise. Good Investment. Free Brochure, Ranchos, Box 2003TT, Alameda, California 94501.

ARPS stump cutter teeth, top quality and best price in U.S.A., D. J. Andrews, Inc., 17 Silver St., Rochester, New York 14611. Call 716 235-1230.

USED EQUIPMENT

VERMEER 604 log chipper with Detroit diesel model PTA41052 power unit; 1969 White Trend cab-over truck with behind cab mount model 100A Husky logger-loader (10,000 lb. capacity at 8 ft.—4450 lb. at 19 ft.) Maximum horizontal reach 21'-4". All in good operating condition. Package price $17,000.00. Chipper and loader purchased new February 1971. Used 18 months. Telepower Services, Inc., P.O. Box 2207, Muncie, Indiana 47302.

1968 VERMEER T & S—44 Tree Spade, mounted on 4 wheel drive, Dodge, asking $6000.00. 1970 Ford Skyworker, 50 ft., with chip box hydraulic outlets at basket, mint condition, asking $12,800.00. 1970 Asplundh Chipper, 12 inch—4 cylinder, mint condition, asking $2,900.00. Edwards Tree Service, 3190 Cooper Foster Park Road, Vermilion, Ohio 44089. Phone 216 967-6750 or 933-6750.

RECONDITIONED brush chippers, sprayers, log splitters, stump routers, bucket trucks. Let us know your needs. Equipment Sales Company, 5620 Old Sunrise Highway, Massapequa, New York 11758. Phone 516 799-7619.

FOR SALE: 1 John Bean 35 GPM Sprayer with 400 Gallon tank, 300 ft. High Pressure Spray Hose, and Hose Reel. For more information write or call B. M. Fry Co., 8636 Mulberry Rd., Chesterland, Ohio 44026. Phone 216 729-7480.

FITCHBURG TWC 6 CHIPPER— Takes 5 to 6" log. Reconditioned, painted, $875.00. William Wehner & Assoc., P.O. Box 3271, Davenport, Iowa 52808.

MISCELLANEOUS

LANDSCAPE DESIGN KIT—37 rubber symbol stamps and ink pad. Postpaid $25.00, C.O.D. $26.00 plus postage. Order direct or brochure sent. California add tax. T-Gordon's, Box 741T, Reseda, California 91335.

TREE APPRAISALS, SURVEYS, loss evaluations and expert consultation services. For names of members of the American Society of Consulting Arborists, Inc., throughout the country, contact: Executive Director ASCA, 12 Lakeview Ave., Milltown, New Jersey 08850.

COMING IN SEPTEMBER

WEEDS TREES and TURF

SHARPENING PRUNING SAWS

EQUIPMENT WANTED

LOOKING FOR 55' Hi-Ranger. Make me an offer. Temple Tree Service, 17371 Willowbrook Dr., South Bend, Indiana 46635.

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trimmings

AQUATIC VEGETATION is reducing the sport fishing potential of ponds and lakes in many parts of the midwest. In Jackson county, South Dakota, largemouth bass, green sunfish and black bullheads generally exceed 500 fish per surface acre. But when heavy growths of aquatic vegetation occur in the summer, the fishing potential is reduced. Solution: fish from a tube float. This doesn't solve the aquatic weed problem, but it keeps weeds out of the active fishing area.

WHO ELSE USES PESTICIDES? According to the National Agricultural Chemicals Association, Industry is the largest non-agricultural user of pesticides. It accounts for nearly one-fifth of domestic sales. An estimated $300 million was spent in 1970 by industry. Uses include: mildew control in paint, wood preservatives, carpet treatments for insect pests, contamination in food preventative; preservation of plaster board, and others.

YOU DIDN'T HEAR THIS from us. The Associated Press reports that Kidwell Turf Farms of Culpepper, Va. has hired a new sales representative. He's been in the turf business for 12 years. The kicker is his name. He's C. S. (Pete) Moss!

WHAT IS AN ARBORIST? What is a forester? According to the American Society of Consulting Arborists an arborist deals with trees as individuals whether naturally seed or planted. The value of such trees, whether on private or public property, to be considered from the standpoint of shade, landscape beautification or recreational enhancement. A forester deals with trees en masse whether naturally seeded or planted. The value of such trees to be considered from the standpoint of lumber, pulpwood, wildlife habitat or erosion control.

SLUGS—everybody hates them, nobody likes them. But how do you get rid of them? Richard L. Miller, extension entomologist at Ohio State University, says use slug bait. With the introduction of Mesurol, we probably have one of the most effective slug killer ever known, he says. Don't feed good beer to those lousy slugs. They don't deserve that kind of treatment, he comments.

ARE YOU AN INTERSTATE commerce businessman? If you are, take a tip from those in the nursery business. Many of these fellows experienced problems in shipping plants to other states this spring. Seems like some states place rigid quarantines on the movement of certain plants into their states. If you have experienced this problem, better contact the state department of agriculture in your state. Or, ask your association to provide a list of quarantined states. The American Association of Nurserymen has periodically published a Quarantine Wall Chart for its members.

REMEMBER THAT PURPLE INK meat processors use to mark hanging carcasses? The ink is Violet No. 1 and the Food and Drug Administration has banned its use. Why? Two Japanese studies indicate that the food coloring may cause cancer. The dye has been in common use for 22 years. Not just on meat, however, but in drugs, cosmetics, beverages, ice cream and bakery goods.

NOISY MILE might be the best way to describe the size of the insect population. Researchers calculate that over 80 percent of all animal life consists of insects. More than a million species of insects have been identified to date and the list is growing. While there are about three billion people in the world, scientists estimate that there are that many insects for every square mile of the earth.

TUSSOCK MOTH damage is causing much clamor in western states. According to the Associated Press, the Oregon department of forestry has sprayed Zectran insecticide on 1000 acres of forests with a reported kill of 78 percent after 12 days.

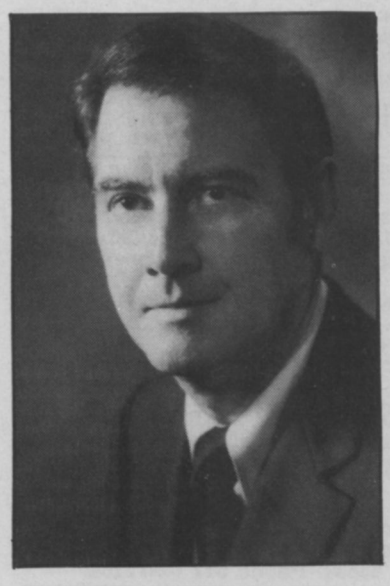
Turfgrass Insects

By **HERBERT T. STREU**

Department of

Entomology and Economic Zoology

Rutgers — The State University



Many insects feed on turfgrass and some can cause severe damage. Several common and important pests are illustrated in the accompanying figure.

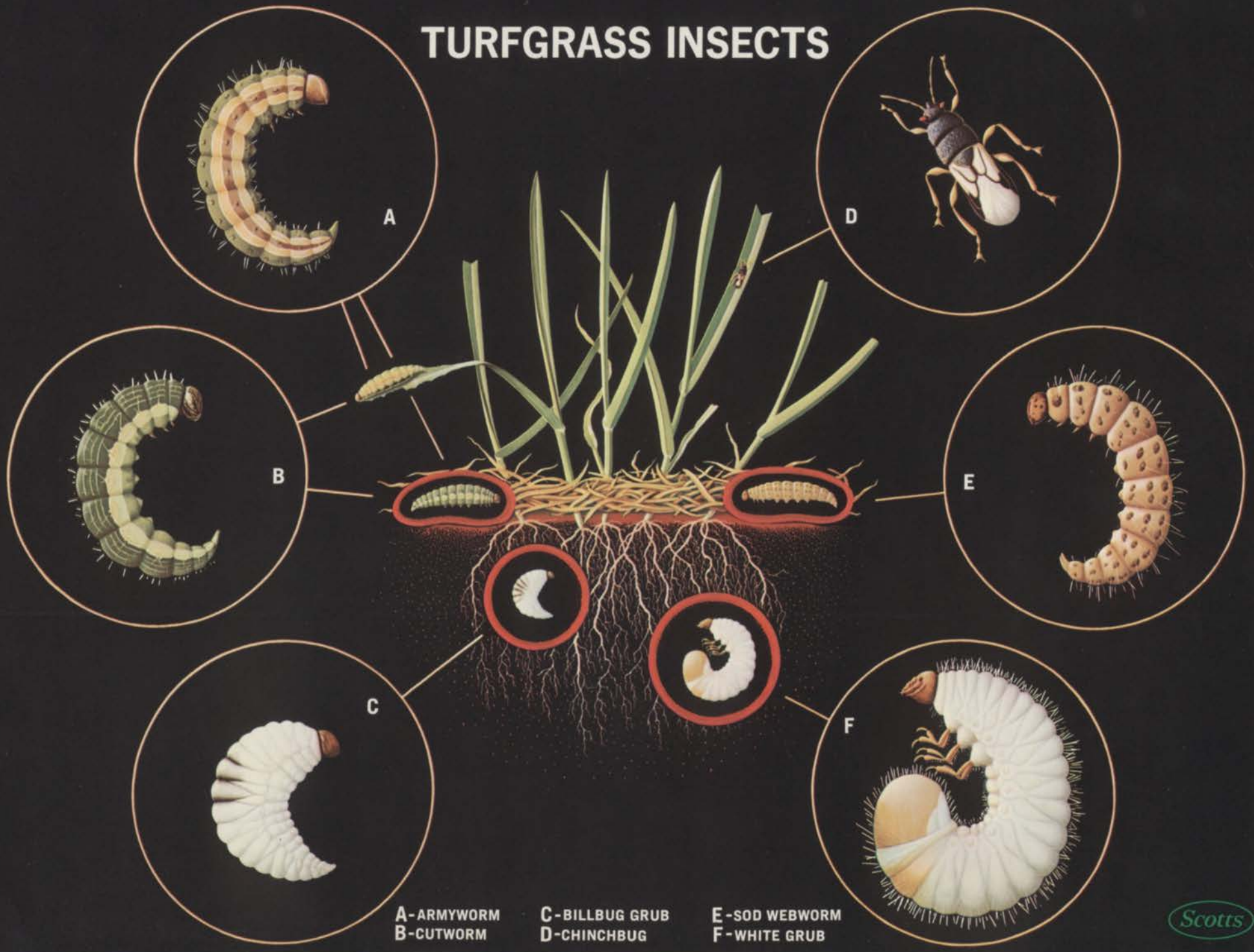
Chinch bugs feed on the above ground plant parts with sucking-type mouthparts. The bugs tend to congregate and early damage is often spotty. Greatest damage occurs during hot, dry seasons when populations may reach many hundreds or more, per square foot.

Billbug and white grubs are beetle larvae which feed below ground chewing off grass roots. As a result, heavily infested sod may be easily rolled, or pulled up, and uncontrolled populations may kill extensive areas of turfgrass.

Sod webworms, armyworms and cutworms are the larvae of a number of species of moths. These caterpillars or "worms" feed above ground chewing off grass leaves and stems, leaving patchy dead areas in the turf.

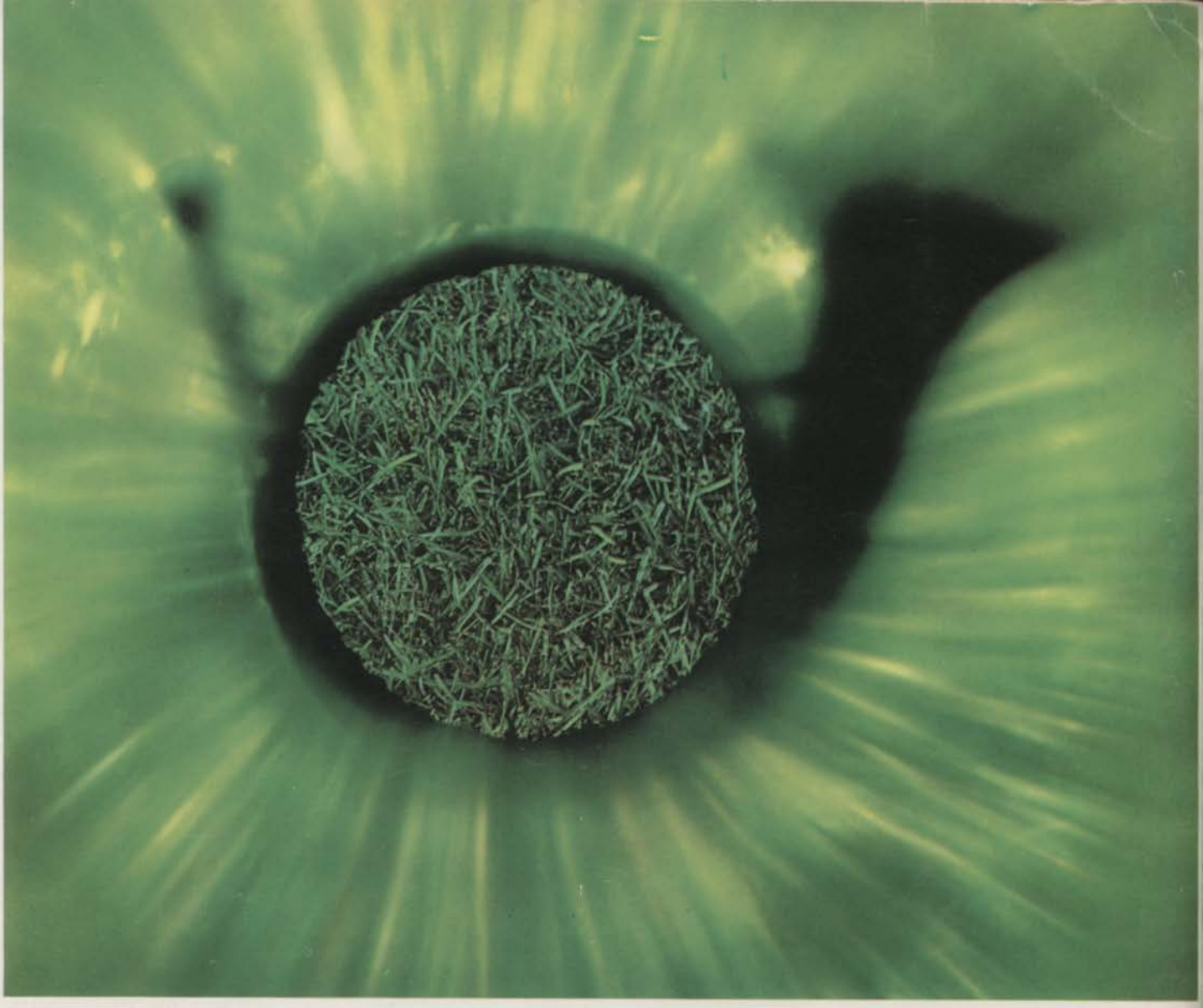
Any of the above insects may occur at the same time in turfgrass and the combined attack on the various plant parts result in multiple damage.

TURFGRASS INSECTS



A-ARMYWORM
B-CUTWORM
C-BILLBUG GRUB
D-CHINCHBUG
E-SOD WEBWORM
F-WHITE GRUB

Scotts



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